WHITE HOUSE ENVIRONMENTAL JUSTICE

ADVISORY COUNCIL

October 4, 2024

Honorable Ms. Brenda Mallory, Chair
Council on Environmental Quality
Executive Office of the President
Washington, DC 20500

Dear Chair Mallory:

The WHEJAC is set forth in Executive Order 14008 to be "a Federal advisory committee that is charged with providing independent advice and recommendations on how to address current and historic environmental injustice to the White House Environmental Justice Interagency Council and the Chair of the White House Council on Environmental Quality." Federal advisory committees like the WHEJAC are critical as an instrument of democracy. This is because the advice and recommendations are "independent." The independent advice and recommendations stem from WHEJAC members who are "appointed by the President, selected from across a wide range of backgrounds, and have knowledge about or experience in environmental justice, climate change, disaster preparedness, or racial inequity, among other areas of expertise." WHEJAC members give advice and recommendations based on their knowledge, experience, and expertise; this is what makes the contributions of the WHEJAC “independent” and a critical element of a well-functioning democracy.

Carbon management, similar to all other topics the WHEJAC has advised and made recommendations on, was brought to the WHEJAC in order for the WHEJAC members to address environmental injustice. Independent advice and recommendations on environmental injustice are not influenced by any factors but the independent judgements of the WHEJAC members that are based on their knowledge, experience, and expertise and the diversity of their backgrounds. As environmental injustice concerns—across its many definitions—the well-being of communities who have suffered greatly from pollution, land dispossession, economic deprivation, ecological degradation, and exclusion from political and economic decision-making that affects them, WHEJAC members' independent advice and recommendations center human rights and dignity, including rights to health, economic opportunity, political participation, equal protection before the law and others, not in the least those referenced in the Executive Order 14096, which states that "to fulfill our Nation’s promises of justice, liberty, and equality, every person must have clean air to breathe; clean water to drink; safe and healthy foods to eat; and an environment that is healthy, sustainable, climate-resilient, and free from harmful pollution and chemical exposure. Restoring and protecting a healthy environment—wherever people live, play, work, learn, grow, and worship—is a matter of justice and a fundamental duty that the Federal Government must uphold on behalf of all people."

Several types of carbon management, including various strategies and technologies, have been reviewed by the WHEJAC, including those specifically referenced in the recommendations herein and those subject to federally guided implementation. The WHEJAC offers its independent advice and recommendations regarding environmental injustice. While the WHEJAC has addressed many topics in its time as a Federal Advisory Committee, some of the types of carbon management, including those funded by statutory obligation, present new risks and harms of environmental injustice, ranging from tangible health harms and risks to democratic concerns, such as the exclusion of communities who face disadvantage from decision-making, among other harms and risks. The WHEJAC is not a committee set forth to condone or approve government action or to advance business and other professional interests.

Again, the WHEJAC gives independent advice and recommendations stemming from the nature of the WHEJAC members' political appointments as people with knowledge, experience, and expertise in environmental injustice. The WHEJAC has addressed, and will continue to address, current and historic environmental injustice in an effort to make the lives of Americans healthier, secure, and vibrant. But any federal actions that would create the possibility of new environmental injustices are ones that WHEJAC members must address by exercising the highest degree of accountability. This is because it is not the charge of the WHEJAC to endorse any actual or potential new environmental injustices to communities who already face disadvantage, nor to offer theoretical assurance to anyone at risk that a new disruption to their health is a worthy tradeoff for some goal espoused by another party.

Certainly, some intergovernmental organizations and panels, nonprofit organizations, and others have, in the past, offered information about some of the types of carbon management over the years, including viewing certain forms of carbon management as part of the mix of climate mitigation solutions. But the WHEJAC's charge regarding carbon management called for advice and recommendations on environmental injustice. This charge required the WHEJAC to review the actual implementation of different types of carbon management, the actual material conditions required to bring about certain technologies, the impacts on communities who face disadvantage, the gaps in knowledge about the climate mitigation effectiveness and scalability and safety of certain technologies and supply chains, and the degree of capacity of the federal government to be accountable to protecting peoples' rights. The WHEJAC's work on carbon management is no scientific modeling exercise, and the WHEJAC could not, in good faith, bracket any conditions, variables, or factors that could pose harms and risks to people, especially communities who are already saddled with disadvantage. The recommendations embody knowledge, experience, and expertise in environmental injustice. There is a growing understanding that the ending of environmental injustice is a logical pathway to the climate mitigation needed to avert the most concerning economic, medical, and ecological threats of climate change. It must never be assumed, especially without evidence, that the establishment of environmental justice is an impediment to swift climate mitigation.

The recommendations presented in this document are an exercise of WHEJAC member’s independence as a Federal Advisory Committee of members appointed for their knowledge, experience, and expertise, and whose work is an important exercise of democracy for the purpose of ensuring all Americans live under conditions of justice.

Sincerely,

Richard Moore, WHEJAC Co-Chair

Peggy M. Shepard, WHEJAC Co-Chair

cc: Members of the WHEJAC
Michael S. Regan, EPA Administrator
Audrie Hicks Washington, Designated Federal Officer, EPA
Dr. Jalonne L. White-Newsome, Federal Chief Environmental Justice Officer, CEQ
Corey Solow, Senior Advisor to the Chair, CEQ
Ryan Hathaway, Director, White House Environmental Justice, Interagency Council, CEQ

Recommendation Report 2

White House Environmental Justice Advisory Council Recommendations: Carbon Management

October 4, 2024

Disclaimer

This report of recommendations has been written as part of the activities of the WHEJAC, a public advisory committee providing independent advice and recommendations on the issue of environmental justice to the Chair of the Council on Environmental Quality (CEQ) and to the White House Environmental Justice Interagency Council (IAC). In addition, the materials, opinions, findings, recommendations, and conclusions expressed herein, and in any study or other source referenced herein, should not be construed as adopted or endorsed by any organization with which any Workgroup member is affiliated. This report has not been reviewed for approval by the EPA or CEQ, and hence, its contents and recommendations do not necessarily represent the views and the policies of the EPA or CEQ, nor of other agencies in the Executive Branch of the Federal government.

Contents

Acknowledgements

The White House Environmental Justice Advisory Council (WHEJAC) acknowledges the efforts of the Carbon Management Workgroup in preparing this report. Workgroup members include Dr. Kyle Whyte, Dr. Beverly Wright, LaTricea Adams, Angelo Logan, Catherine Coleman Flowers, Jerome Foster II, Juan Parras, Dr. Nicky Sheats, Esq., Dr. Rachel Morello-Frosch, Maria Lopez-Nunez, Dr. Ana Baptista and Peggy Shepard. The WHEJAC acknowledges the stakeholders and community members who participated in the workgroup's deliberation by providing public comments. The workgroup's efforts were supported by the U.S. Environmental Protection Agency staff from the Office of Environmental Justice and External Civil Rights (OEJECR), notably, Audrie Washington as the WHEJAC Designated Federal Officer, Karen L. Martin, Director of the Partnerships and Collaboration Division; Anthony Nicome and Amanda Cronin from OEJECR; Dr. Jalonne L. White-Newsome, Federal Chief Environmental Justice Officer from the White House Council on Environmental Quality.

Abbreviations

ARCHES	Alliance for Renewable Clean Hydrogen Energy Systems
BECCS	Bioenergy with Carbon Capture and Storage
BIL	Bipartisan Infrastructure Law
BSER	Best System of Emissions Reductions
CAG	Community Advisory Group
CBA	Community Benefits Agreement
CBP	Community Benefits Plan
CCS	Carbon Capture and Sequestration
CCUS	Carbon Capture, Utilization and Storage
CEJST	Climate & Economic Justice Screening Tool
CEQ	Council on Environmental Quality
DAC	Direct Air Capture
DENR	Department of Natural Resources
DFO	Designated Federal Officer
DOE	Department of Energy
EA	Environmental assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMNRD	Energy, Minerals and Natural Resources Department
EO	Executive Order
EPA	Environmental Protection Agency
FEED	Front-End Engineering Design
FOIA	Freedom of Information Act
GAO	Government Accountability Office
GHG	Greenhouse Gas
GO-Biz	Governor's Office of Business and Economic Development
HHS	Department of Health and Human Services
ICD	International Classification of Diseases
MACH2	Mid-Atlantic Clean Hydrogen Hub, Inc.
MRV	Monitoring, reporting, and verification
NDA	Non-Disclosure Agreement
NEPA	National Environmental Policy Act
NOx	Nitrous Oxides
OCED	Office of Clean Energy Demonstration
OMB	Office of Management and Budget
PHMSA	Pipeline and Hazardous Materials Safety Administration
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
TAG	Technical Assistance Grants
TASC	Technical Assistance Services for Communities
UCS	Union of Concerned Scientists
UIC	Underground Injection Control
WHEJAC	White House Environmental Justice Advisory Council
WISHH	Western Inter-State Hydrogen Hub

White House Environmental Justice Advisory Council Members

- Richard Moore, Los Jardines Institute (Co-Chair)
- Peggy Shepard, WEACT for Environmental Justice (Co-Chair)
- Carletta Tilousi, Havasupai Tribe (Vice-Chair)
- Catherine Coleman Flowers, Center for Rural Enterprise and Environmental Justice (Vice-Chair)
- Angelo Logan, East Yard Communities for Environmental Justice
- Rachel Morello-Frosch, PhD, University of California-Berkeley
- Viola Waghiyi, Alaska Community Action on Toxics
- Miya Yoshitani, Asian Pacific Environmental Network
- Kim Havey, Sustology
- Kyle Whyte, PhD, Esq., University of Michigan
- Tom Cormons, Esq., Appalachian Voices
- LaTricea Adams, Young, Gifted and Green
- Harold Mitchell, ReGenesis
- Beverly Wright, PhD, Deep South Center for Environmental Justice
- Susana Almanza, People Organized in Defense of Earth and Her Resources
- Jade Begay, EJ Agency
- Robert Bullard, PhD, Esq., Texas Southern University
- Juan Parras, Texas Environmental Justice Advocacy Services
- Maria Belen Power, Commonwealth of Massachusetts
- Jerome Foster II, Waic Up
- Maria López-Núñez, Ironbound Community Corporation
- Michele Roberts, Environmental Justice and Health Alliance for Chemical Policy Reform
- Nicky Sheats, PhD, Esq., Kean University
- Lloyd Dean, CommonSpirit Health
- Anita Cunningham, North Carolina Disaster Response Network
- Jamaji C. Nwanaji-Enwerem, MD PhD, MPP, University of Pennsylvania
- Joanne Perodin, The Climate Leadership Engagement Opportunities Institute
- Michael Walton, Energy Transition Finance
- Tye Baker, Environmental Protection Service, Choctaw Nation
- Carlos Evans, Office of Environmental Quality and Sustainability, City of Dallas
- Igalious Mills, International Farmers and Ranchers
- Susan Hendershot, Interfaith Power and Light
- Harleen Kaur Marwah, MD, Children's Hospital of Philadelphia
- Donele Wilkins, Green Door Initiative
- Tanner Yess, Groundwork Ohio River Valley
- Ruth Santiago Esq., Comité Dialogo Ambiental

Audrie Washington, Designated Federal Officer, U.S. Environmental Protection Agency Office of Environmental Justice and External Civil Rights

WHEJAC Carbon Management Workgroup Members

- Kyle Whyte, Ph.D., Esq., University of Michigan (Workgroup Co-Chair)
- LaTricea Adams, Black Millennials for Flint (Workgroup Co-Chair)
- Beverly Wright, Ph.D., Deep South Center for Environmental Justice (Workgroup Co-Chair)
- Ana Baptista, Ph.D., The New School
- Angelo Logan, East Yard Communities for Environmental Justice
- Barbara Suzi Ruhl, JD, MHP
- Catherine Coleman Flowers, Center for Rural Enterprise and Environmental Justice
- Jerome Foster II, Waic Up
- Juan Parras, Texas Environmental Justice Advocacy Services
- Maria López-Núñez, Ironbound Community Corporation
- Monique Hardin, Deep South Center for Environmental Justice
- Nicky Sheats, Ph.D., Esq., Kean University
- Peggy Shepard, WEACT for Environmental Justice
- Rachel Morello-Frosch, Ph.D., University of California-Berkeley
- Sasan Amir Saadat, Earthjustice

Executive Summary

Recommendation Report 2 reflects a wide range of recommendations pertaining to the emerging developments on carbon management impacting environmental justice communities throughout the country. The report includes consideration of both near-term and long-term or sustained approaches to carbon management that cut across multiple federal agencies, although there is a particular focus on the Department of Energy's Office of Clean Energy Demonstration and the Fossil Energy and Carbon Management Office, which have significant involvement with a wide array of carbon management investments, projects, and programs.

The report begins with an Introduction that reflects the context and crosscutting recommendations of the workgroup. Sections II, III, and IV of the report includes some of the most recent and significant carbon management investments affecting EJ communities (*Hydrogen Investments, Projects and Regulations*; *Carbon Capture Utilization & Storage, Direct Air Capture, and Bioenergy with Carbon Capture and Storage*; and *Biochar)*. Sections V–VII give an overview and summary of recommendations pertaining to important regulatory actions related to carbon management including US EPA Underground Injection Control Class VI Permitting; US EPA Rule on Reducing GHG Emissions from Existing Natural Gas Fuel-Fired Stationary Combustion Turbines; and NEPA Permit Rules for Carbon Management Projects.

Finally, the report returns to some of the substantive areas of recommendations covered in the November 2023 report focused on public participation processes, meaningful engagement, and agency accountability. These issues continue to be pervasive concerns that are increasingly the focus of EJ communities faced with large-scale projects like Regional Hydrogen Hubs and Direct Air Capture Hubs that are rolling out in their communities. Thus, Section VIII (Agency Transparency, Accountability, Public Engagement, and Community Benefit Agreements/Community Benefits Plans) focuses on recommendations to improve these processes.

Section IX (Case Studies of Carbon Management Projects in EJ Communities) focuses on case studies from EJ communities grappling with carbon management projects that are underway. Although the report includes a comprehensive slate of recommendations for federal agencies to consider, the workgroup calls particular attention to the near-term recommendations featured in Section IX, about which EJ communities have raised concerns. In addition to these near-term recommendations, the following recommendations represent the highest priority items for agencies to address.

Section I. Introduction

Recommendation 1. The workgroup requests a response to specific information regarding carbon management projects and investments under the purview of the DOE. See Appendix C for a detailed list of requests that would be the subject of a FOIA request to DOE from the WHEJAC workgroup if this information is not accessible otherwise.

Recommendation 2. Federal agencies should adhere to guidance issued by CEQ to improve transparency, communication in plain language, and disclosure of the risks, uncertainties, and environmental justice concerns related to carbon management projects. This includes information about the co-location of all carbon management projects in relation to disadvantaged communities (CEJST tool) and environmental justice communities. Information about the potential adverse and cumulative impacts and the risks associated with all aspects of carbon management should be made accessible to the communities with environmental justice concerns and the public. Federal agencies can make use of existing tools, such as EPA EJScreen and the HHS EJ Index tool to understand the risks and burdens facing EJ communities and the potential for carbon management projects to exacerbate or contribute to those burdens.

Section II. Hydrogen Investments, Projects, and Regulations

Recommendation 3. Federal agencies regulating or investing in hydrogen projects must measure and disclose all potential emissions from the full life cycle of hydrogen projects, including production, storage, transportation, distribution, and use. All infrastructure involved, new or existing, in scoping, developing, bringing into functionality, operating, maintaining, and retiring a hydrogen project must be included.

Recommendation 11. Implement a clear mandate on a "community right of refusal" process for carbon management projects. The DOE must offer clear responses to the following questions: What are the legal or extralegal processes for communities to intervene in and decline hydrogen hub projects at the various phases of the project's scope? How do Go–No Go process points incorporate community input, and is there an appeals process for Go–No Go decisions? Are Go–No Go decisions subject to legal challenge by communities with stated opposition and concerns about the proposed project?

Recommendation 18. EPA and DOE can collaborate to set up independent Community Advisory Groups attached to each of the Hydrogen Hub communities, following the EPA's Superfund CAG model and provide technical assistance grants and Technical Assistance Services for Communities .

Section III. Carbon Capture (Utilization) & Storage, Direct Air Capture, and Bioenergy with Carbon Capture and Storage

Recommendation 1. All CCS/CCUS, DAC, and BECCS projects should analyze and publicly disclose the ecological and environmental impacts (air, water, soil), human and public health risks and impacts, cumulative impacts, explosion and seismic risks, full life cycle assessments of greenhouse gas emissions outcomes, and co-pollutant emissions related to these projects. These risks and impacts must be accounted for in the early phases of scoping of projects in any community benefit plans and must be included in the permitting of projects and publicly reported.

Recommendation 3. The regulatory and statutory requirements for carbon storage sites must be well defined and publicly clarified prior to awarding carbon management projects tax incentives and grants. Critical questions include: Who owns underground pore space? What are the requirements for industries seeking to store carbon underground and also planning to extract oil or gas on the same land? Who pays for remediation if CO_2 wells create future problems? Who has primacy for permitting and public notification?

Recommendation 4. EPA and DOE should clarify which permits pertain to existing CCS projects already funded by DOE, including large-scale demonstrations, pilots, and FEED studies. They can also make available links to the permits that cover these projects and clarify any regulatory requirements that these projects may trigger in the future.[1] EPA and DOE can coordinate to make this information available publicly on the websites that list summaries of regulatory and statutory authority governing each project and project phase, along with key points of contact for respective agencies. Each carbon management project should specifically report the co-pollutant emissions along with the GHG emissions that come from

1. Ramesh-Nair, "Executive Summary—Hydrogen Cofiring Demonstration at New York Power Authority—S. Brentwood Site—GE LM6000 Gas Turbine," Scribd, December 2022, www.scribd.com/document/622271675/3002025166-Executive-Summary-Hydrogen-Cofiring-Demonstration-at-New-York-Power-Authority-s-Brentwood-Site-GE-LM6000-Gas-Turbine.

the construction and operation of CCS, CCUS, DAC, and BECCS facilities, including the disclosure of the fuel source that powers the CCS equipment.

Recommendation 8. DOE and the chairs of the CCS Task Forces must meaningfully engage and incorporate the expertise and input of environmental justice organizations and add additional members that represent EJ community stakeholders on the two new task forces set up to inform the roll out of CCUS permitting on federal and non-federal lands.[2]

Section V. EPA Underground Injection Control Class VI Permitting

Recommendation 3. EPA should suspend issuance of UIC Class VI permits to carbon management technologies and programs until it has made a determination that permit applications for projects and wells currently under review have achieved full compliance with applicable regulations and authorities, including public participation requirements. EPA should also conduct a compliance evaluation for all Class VI wells issued to date by EPA and commence appropriate permit revocation proceedings or other actions as a result of noncompliance.

Recommendation 5. EPA should suspend delegation of primary enforcement authority for UIC Class VI programs until it has made a determination that each state has achieved full compliance with applicable rules and authorities, including public participation requirements. EPA should also conduct a compliance evaluation for states receiving primacy delegation to determine compliance with laws and regulations and commence withdrawal proceedings for states in noncompliance.

Section VI. EPA Rule on Reducing GHG Emissions from Existing Natural Gas Fuel-Fired Stationary Combustion Turbines

Recommendation 1. Carbon capture and storage and hydrogen co-firing should both be absent from the re-proposal of the rule focused on natural gas plants and a cumulative impacts analysis and policy should be included when the rule is ultimately promulgated. CCS and hydrogen co-firing should not be designated as BSERs in this new rule.

Recommendation 3. Cumulative impacts analysis should be incorporated into the rule to identify natural gas plants located in overburdened, disadvantaged, EJ communities.[3] If EPA designates CCS or hydrogen co-firing as a BSER over the objections of an EJ community, then cumulative impacts analysis should be used to determine if either methodology would increase power plant-related GHG co-pollutant emissions in overburdened EJ communities. If it is demonstrated that this would occur, then the plant should not be allowed to use the BSER responsible for increased emissions, whether it is hydrogen co-firing or CCS.

---

2. https://www.whitehouse.gov/ceq/news-updates/2023/03/24/ceq-announces-members-of-task-forces-to-inform-responsible-development-and-deployment-of-carbon-capture-utilization-and-sequestration/
3. "Power Plants and Neighboring Communities," United States Environmental Protection Agency, January 24, 2021. https://www.epa.gov/power-sector/power-plants-and-neighboring-communities; "Climate and Economic Justice Screening Tool," Geoplatform.gov. 2022. https://screeningtool.geoplatform.gov/en/#8/0/0.

Section VII. NEPA Permit Rules for Carbon Management Projects

Recommendation 1. Due to the potential of carbon management projects to exacerbate harms in EJ communities, categorical exclusions should never be applied to carbon management projects that will be sited in overburdened, disadvantaged EJ communities.

Recommendation 2. An EIS should be required for all carbon management projects that will be sited in overburdened, disadvantaged EJ communities due to the significant harm they can inflict on communities. Carbon management projects sited in EJ communities can produce extraordinary circumstances and therefore require an EIS.

Recommendation 5. Public comment periods should be at least 90 days to provide adequate time for community members to review, request technical assistance, and develop comments. We recommend the scoping process be required as part of an EA, including notifying the public of mandatory NEPA-related hearings and public meetings. All environmental documents must be made accessible for the public's review at least 60 days before subject to a public hearing or meeting.

Section VIII: Agency Transparency, Accountability, Public Engagement and Community Benefit Agreements/Community Benefits Plans

Recommendation 1. All federally funded carbon management projects, including, but not limited to the regional hydrogen hubs and the regional DACs, should adopt robust public participation requirements in all phases of their project development. In particular, public participation requirements should be similar to those already codified by environmental statutes like NEPA.

Recommendation 5. DOE should suspend the use of CBAs and CBPs until the project's full scope of impacts and risks are fully disclosed to the public and shared with impacted community stakeholders. Any CBAs that are applicable to disadvantaged and environmental justice communities should be shared with the WHEJAC for review and feedback prior to finalization.

Recommendation 6. If CBPs continue to be a part of carbon management projects, these CBPs must require criteria in addition to the four components currently required in CBPs. These additional criteria should detail the (1) environmental impacts and risks to local communities and workers; (2) environmental justice considerations, including contributions to existing cumulative impacts and burdens; and (3) any public health impacts and protections for local communities and workers and their families. These additions to CBPs must fully disclose environmental and public health risks, technical, financial and exposure uncertainties and cumulative impacts related to the existing burdens experienced in the project areas, including the use of EPA's EJScreen and the CDC EJ Index tools.

I. Introduction

The WHEJAC Carbon Management Workgroup provided detailed recommendations in the November 17, 2023, report which included the following:

> *The initial recommendations we are putting forward include the following five recommendations: (1) Cease carbon management investments and projects; (2) clarify the landscape of carbon management initiatives and technologies that federal agencies are advancing; (3) conduct a systematic review of the evidence of risks related to carbon management; (4) engage in accountable communications with EJ communities; and (5) ensure free, prior and informed consent, and meaningful engagement of the most impacted communities be put into practice.*

The workgroup has, to date, not received a full set of responses to these recommendations from the responsible federal agencies. There have been some specific written responses to portions of the recommendations and some interim responses to inquiries from workgroup members detailed below. The workgroup has also submitted a few priority requests specifically related to recommendations 4 and 5 pertaining to community engagement and transparency, particularly around the DOE's launch of the Regional Hydrogen Hubs that occurred following the release of the November report.

The following are specific responses to inquiries that the workgroup sent to CEQ and DOE[4]:

1. January 9, 2024, memo with three requests from the DOE to the workgroup following a discussion with the DFO regarding WHEJAC (1.9.24)
2. April 11, 2024, memo received from DOE's Offices of Fossil Energy and Carbon Management and Clean Energy Demonstrations in response to an email on January 16, 2024, asking for information regarding CBAs.
3. April 29, 2024, memo received from DOE relaying responses to questions from the workgroup from March 28, specifically about the projects under the DOE's Clean Energy Demonstrations Portfolio.

One of the workgroup's inquiries to the DOE focused on how members of the public could gain access to applications funded by the DOE, particularly the Hydrogen Hub awards announced in October of 2023. DOE's response in its April 29, 2024, memo is inconsistent with best practices of meaningful engagement at the heart of environmental justice, stating in part: "*The FOAs (Funding Opportunity Announcements) contain language that dictates what/how application information will be used. FOIA [Freedom of Information Act] is currently the best avenue to obtain this information from DOE.*" The Workgroup continues to raise serious questions about the transparency of federal agency actions in light of recent public processes related to DOE funded programs like the Hydrogen Hubs. These concerns reinforce those raised in the workgroup's first report (November 2023) around meaningful engagement and the recommendation to ensure host communities are fully informed of the attendant risks, potential impacts and full disclosure of all plans and agreements related to projects funded by agencies such as the DOE, prior to undertaking any community benefits discussions. Furthermore, it's with great dismay that the workgroup has been unable to access detailed or substantive information pertaining to projects, community plans or agreements, or public engagement processes that are underway with public funding.

4. The list of correspondence is not exhaustive and additional information was shared via email correspondence with the DFO to the workgroup after completion of the report in May 2024.

One of the overarching priority recommendations in this report is the need to increase the transparency around federally funded projects, improve the disclosure process around the risks, impacts, and uncertainties associated with these projects and significantly reform public engagement processes to ensure more meaningful engagement of disadvantaged communities in all carbon management programs across the federal government. There are important legal precedents and policy guidance such as the Executive Order 14096 on Environmental Justice (Section 3.vii) that should inform the public participation and engagement processes related to carbon management programs.[5]

Recommendation 1

The workgroup requests a response to specific information regarding carbon management projects and investments under the purview of the DOE. See Appendix C for a detailed list of requests that would be the subject of a FOIA request to DOE from the WHEJAC workgroup if this information is not accessible otherwise.

While federal agencies continue to direct significant public investments into carbon management, there is a dearth of information and disclosure of the attendant risks, uncertainties, and environmental justice concerns that have been consistently raised by EJ communities. There are crosscutting recommendations to address disproportionate and adverse impacts, including cumulative impacts concerns that are part of the legacy of burdens faced by EJ communities. This issue is also plainly laid out as a directive in the EO 14096 in S*ection 3. (i) "identify, analyze, and address disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities, including those related to climate change and cumulative impacts of environmental and other burdens on communities with environmental justice concerns."*

Recommendation 2

Federal agencies should adhere to guidance issued by CEQ to improve transparency, communication in plain language and disclosure of the risks, uncertainties and environmental justice concerns related to carbon management projects. This includes information about the co-location of all carbon management projects in relation to disadvantaged communities (CEJST tool) and environmental justice communities. Information about the potential adverse and cumulative impacts and the risks associated with all aspects of carbon management should be made accessible to the communities with environmental justice concerns and to the public. Federal agencies can make use of existing tools such as the EPA EJScreen and the HHS EJ Index tool to understand the risks and burdens facing EJ communities and the potential for carbon management projects to exacerbate or contribute to those burdens.

---

5. EO 14096, Sec 3.vii states: "provide opportunities for the meaningful engagement of persons and communities with environmental justice concerns who are potentially affected by Federal activities, including by: (A) Providing timely opportunities for members of the public to share information or concerns and participate in decision-making processes; (B) Fully considering public input provided as part of decision-making processes; (C) Seeking out and encouraging the involvement of persons and communities potentially affected by Federal activities by: (1) Ensuring that agencies offer or provide information on a Federal activity in a manner that provides meaningful access to individuals with limited English proficiency and is accessible to individuals with disabilities; (2) Providing notice of and engaging in outreach to communities or groups of people who are potentially affected and who are not regular participants in Federal decision-making; and (3) Addressing, to the extent practicable and appropriate, other barriers to participation that individuals may face; and (D) Providing technical assistance, tools, and resources to assist in facilitating meaningful and informed public participation, whenever practicable and appropriate…"

DOE's Office of Fossil Energy and Carbon Management recently established a Carbon Management Resource Portal[6] that includes a variety of reports, datasets, and information. While this resource is possibly a first step in improving information sharing, the resource tool does not address the persistent environmental justice concerns raised by this workgroup and by members of disadvantaged communities. Firstly, the portal does not offer an explanation of the methodology used to select the resources for the portal, nor does it offer an independent, unbiased curation of resources on these subjects. For example, there are few peer-reviewed resources focused on environmental, public health, and safety risks of carbon management approaches. It includes a large number of articles and reports that are biased in favor of promoting carbon management in both theory and practice, including documents in which a material interest in the implementation of carbon management is the primary driver of the research. There are also a number of articles that were directly conducted or funded by industries who themselves were recipients of DOE funding. The portal is markedly absent articles and reports that provide information independent of industry bias that could afford accountability and be useful to the public, especially research and information on efficiency, safety, health, environmental impacts, and justice and equity. A majority of the current articles and reports are not peer reviewed and are undertaken by groups with direct and indirect ties to the carbon management industry. One example of this is the report listed under the "Carbon Management" drop down menu of the resource portal, by the Great Plains Institute.[7] This report was conducted with the private firm Carbon Solutions LLC, which directly benefits from CCS investments, and the study did not undergo peer review to help verify the methodology or conclusions ascertaining "benefits" for co pollutants.[8]

If the portal aims to encompass the full range of reports and currently available knowledge on carbon management, then it should also include reports, articles, and studies by experts and investigators who have no material interest in the advancement of CCS, and that conduct themselves according to the highest standards of accountability, including peer review and community review. This includes reports that offer critical perspectives when the evidence and information (or lack of) warrants such scrutiny. It should also include research aimed specifically at environmental justice concerns by researchers and scholars that are trusted by EJ communities and who have demonstrable track records in environmental justice research. Many of the peer reviewed literature and reports referenced in the workgroup's November 2023 Report under "Further Reading" in Sections 2–5 of the report are not included in the portal. The tool currently suffers from a lack of evidence-based and critical knowledge and a lack of a fair and unbiased methodology for curating the articles considered "resources" for informing the general public.

Recommendation 3

DOE should overhaul their carbon management resource portal and remove any reports that were undertaken by entities with a material interest in carbon management and/or reports that are not peer reviewed. Alternatively, the portal could be moved over to management and oversight by the CEQ's Office of Science and Technology Policy or the National Academy of Sciences, who could best undertake a robust, public, and transparent appraisal of the literature and gaps in research related to carbon management. These independent outlets could provide oversight, guidance, and recommendations to federal agencies

---

6. "Carbon Management Resource Portal," revised July 3, 2024, https://www.energy.gov/fecm/carbon-management-resource-portal?utm_medium=email&utm_source=govdelivery.
7. Bennett J, Kammer R, Eidbo J, Ford M, Henao S, Holwerda N, Middleton E, Ogland-Hand J, Rodriguez D, Sale K, Talsma C, Thomley E, Fry M. Carbon Capture Co-Benefits. Great Plains Institute. 2023. https://carboncaptureready.betterenergy.org/carbon-capture-co-benefits.
8. The report does not disclose any funding or conflicts of interest by the authors or with the firm Carbon Solutions.

like DOE about how to address research gaps and also curate a more balanced resource list of research pertaining to the risks and potential environmental justice impacts of carbon management.

Whole Health, Whole Government Solutions for Communities. Administration policy established through multiple Executive Orders (e.g., 13895, 14008, and 14096) direct the federal government to pursue a comprehensive approach to advancing equity for people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. This responsibility of the whole of government (i.e., executive departments and agencies) requires a systematic approach to organize and deploy the full capacity of its agencies to combat the climate crisis. The federal government must implement strategies that reduce climate pollution in every sector of the economy; increase resilience to the impacts of climate change; protect public health; and deliver environmental justice. These policies recognize that environmental justice communities experience disproportionate and adverse human health or environmental burdens and suffer from poorer health outcomes and have lower life expectancies, which arise from inequitable access to basic human health and environmental needs. (See Appendix A for supporting information). The White House Environmental Justice Interagency Council must produce the roadmap to overcome cultures of silos across government departments and detect barriers to cross-department collaboration. It must ensure the commitment and allocation of time and resources by the executive department and agencies to overcome barriers and foster collaboration across silos.

Recommendation 4

The White House Interagency Council should develop and implement a whole health, whole government restorative process for communities experiencing adverse cumulative impacts from carbon management technologies and programs. This process should simultaneously tackle profound health disparities, environmental injustices, and lack of basic needs and safety that place these communities at exceptional risk, with the vision of whole health of children and families, undivided by mental and physical illness, undistinguished by race, class, language, or ability, supported by safe places and environments surrounding every child and family, and sustained with financial resources for high quality health care.

Executive offices, departments and agencies should identify, prioritize, and take restorative action in areas with carbon management operations that may require special attention or additional resources to improve health and health equity.

To address health care needs of individuals exposed to environmental pollution and climate change in areas with carbon management operations, federal departments led by HHS should support application of ICD-10 Z Codes.[9] This includes efforts to heighten access to health care for environmental exposures; provide data to help analyze the unique, local factors driving cumulative impacts on health to inform policy and decision making; and educate and inform the public about measures to restore the whole health (physical and mental) and well-being of children, families, and communities.

9. "USING Z CODES: The Social Determinants of Health (SDOH) Data Journey to Better Outcomes," Centers for Medicare & Medicaid Services, revised June 2023, https://www.cms.gov/files/document/zcodes-infographic.pdf.

II. Hydrogen Investments, Projects, and Regulations

Federal agencies are involved in a range of activities promoting the use of hydrogen in multiple sectors, including transportation fuels, power sector co-firing, industrial and chemical sectors with carbon management, etc. The DOE's Office of Energy Efficiency and Renewable Energy describes the federal approach to the "national clean hydrogen strategy." Under the DOE's purview, several investments have been launched including the "Hydrogen Shot" and the regional hydrogen hubs awarded under the DOE's OCED program.[10] The regional hydrogen hubs are by far one of the most significant investments in hydrogen, with $7 billion in the development of the following hubs:

1. Appalachian Regional Hydrogen Hub
2. California Hydrogen Hub (Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES)
3. Gulf Coast Hydrogen Hub (HyVelocity H2Hub; Texas)
4. Heartland Hydrogen Hub (MN, ND, SD)
5. Mid-Atlantic Hydrogen Hub (Mid-Atlantic Clean Hydrogen Hub (MACH2); PA, DE NJ)
6. Midwest Hydrogen Hub (Midwest Alliance for Clean Hydrogen (MachH2); IL, IN, MI)
7. Pacific Northwest Hydrogen Hub (PNW H2; WA, OR, MT)

Permitting and Regulatory Considerations

Recommendation 1

Each step in the hydrogen hubs process must include a robust public engagement process. This public engagement process, at minimum, must comply with federal environmental laws, including NEPA and the Safe Drinking Water Act. In situations where state environmental laws have enhanced environmental protection standards, those State laws ought to be appealed to first.

Recommendation 2

All hydrogen hubs must comply with NEPA, the Safe Drinking Water Act, and other permitting laws without any categorical exclusion (See Section X on NEPA and Section Y on SDWA UIC Class VI wells for more detailed recommendations). All the projects must include an environmental justice analysis as part of the NEPA review process for each level of review (e.g., EIS, environmental assessment) and state environmental review processes. This environmental justice analysis must analyze the entire geography the project claims to benefit and consider cumulative impacts of the project across that area.

10. The DOE recently released a Hydrogen factsheet (April 26, 2024) or FAQ on "common concerns" related to hydrogen. They have also formed and developed a U.S. National Clean Hydrogen Strategy and Roadmap (June 2023). Hydrogen Interagency Taskforce and developed a U.S. National Clean Hydrogen Strategy and Roadmap (June 2023).

Cumulative, Disproportionate or Adverse Impacts + Environmental, Health and Safety Risks/Disclosures

Recommendation 3

Federal agencies regulating or investing in hydrogen projects must measure and disclose all potential emissions from the full life cycle of hydrogen projects, including production, storage, transportation, distribution, and use. All infrastructure involved, new or existing, in scoping, developing, bringing into functionality, operating, maintaining, and retiring a hydrogen project must be included.

Recommendation 4

Federal agencies and project proponents of hydrogen hubs should disclose to the public all relevant studies, data, and models used to quantify estimated emissions (criteria pollutants, HAPs, GHG, etc.) and health impacts of the awarded projects.

Recommendation 5

Federal agencies must measure and disclose potential safety risks and hazards from the full life cycle of a hydrogen project, including production, storage, transportation, distribution, and use. All related infrastructure should be considered. Safety assessments should incorporate unique flammability risks of hydrogen and account for compression used in storage and handling, especially the increased potential safety risk from compressed hydrogen.

Recommendation 6

Require testing and assessment for any use of hydrogen in existing infrastructure, especially in cases where hydrogen is proposed to be mixed with other fuels. There should be a clear assessment of any modifications required of the infrastructure, policies, and processes that are changed when switching fuel sources or mixing fuel sources. Special attention should be paid to the risks of leakage since leakages can occur even with dedicated lines.

Recommendation 7

Protections must be developed related to water use for production and desalination. Potable water should not be used in the production of hydrogen. Water consumption and diversion can increase stressors on water access burdened communities, adding to negative health impacts in those communities.

Recommendation 8

The reliability of water supply in the context of intensifying weather extremes and prolonged droughts must be a major factor in the decision to invest in hydrogen, especially in water stressed areas like New Mexico. Hydrogen projects that require significant water sources should never be considered when they pose risks to water rights and include areas where water stress is already a problem.

Recommendation 9

Hydrogen production facilities require large amounts of energy to operate. Hydrogen projects must measure the power impacts and diversion potential of operations, including estimated rate increase or grid reliability impacts from hydrogen production facilities before being approved or funded.

Recommendation 10

Employ the best available real-time monitoring technology of hydrogen leakage, with special attention and preparation for instances where hydrogen leakage may interact with existing infrastructure. Responsible agencies should outline leak response protocols to ensure leaks are addressed in a timely manner.

Community Right of Refusal (Go–No Go); Free, Prior, Informed Consent; and Meaningful Engagement

Recommendation 11

Implement a clear mandate on a "community right of refusal" process for carbon management projects. The DOE must offer clear responses to the following questions: What are the legal or extralegal processes for communities to intervene in and decline hydrogen hub projects at the various phases of the project's scope? How do Go–No Go process points incorporate community input, and is there an appeals process for Go–No Go decisions? Are Go–No Go decisions subject to legal challenge by communities with stated opposition and concerns about the proposed project?

Recommendation 12

Improve transparency and accountability with respect to the regional hydrogen hub projects; specifically, share information on (a) detailed application materials (i.e., affiliated organizations, project principles' titles, contact info, etc.); (b) disadvantaged communities impacted; (c) permitting requirements and status of permits; and (d) technical documents on project scope and feasibility.

Recommendation 13

The Government Accountability Office, Office of Management and Budget and Treasury Department must provide ongoing reporting, tracking, and monitoring of the hydrogen hub awards, including reporting on the impact and effectiveness of the funding.

Recommendation 14

Recipients of the hydrogen hub award must disclose the financial viability of their projects. This is especially important for projects that have a potential to become stranded assets without the continued infusion of government funds. The disclosure of financial viability must be such that the public can assess the financial sustainability of the project and must not exclude any records of findings or analysis that indicate actual or possible challenges to financial viability and sustainability.

Recommendation 15

Publicly disclose details of hydrogen production implicated in all hydrogen hubs projects, including:

a. Hydrogen production technology used (e.g., steam methane reformation, gasification, Proton Exchange Membrane electrolysis, Solid Oxide Fuel Cell electrolysis, etc.).
b. Energy supply (e.g., on-site renewables, grid-connected energy, pipeline gas, etc.)
c. Power purchase agreements or renewable energy certificates used for hydrogen production.

Recommendation 16

Publicly disclose details of the hydrogen storage and transport, involved with hubs including:

a. Whether the hydrogen will be stored as a compressed gas, liquid, a derivative (e.g., ammonia or methanol) or other method.
b. The location of hydrogen storage equipment and the maintenance and safety testing protocol.
c. Method of transport (e.g., dedicated pipeline, existing pipeline, container truck, container rail, etc.).

Recommendation 17

Publicly disclose details of hydrogen end-use included in hub projects, including:

a. The sector that the end-use targets (e.g., buildings, transportation, energy production, etc.).

b. The particular equipment that will use the hydrogen.
c. The location and duty cycle of the end-use equipment.
d. Whether the hydrogen will be combusted or used in a fuel cell.
e. Whether alternative decarbonization pathways have been considered.

Public Participation and Engagement Process

The WHEJAC carbon management workgroup and local EJ groups have attempted to gain access to information about regional hydrogen hubs from DOE and have faced obstacles in obtaining basic information about the details of project proposals, technical reports and community benefits agreements. DOE's April memo to the Workgroup suggests that more information about some of these projects may be forthcoming in an interactive map. However, it remains difficult to obtain even basic information about projects such as the exact location of some projects and the full list of parties that are involved in proposals that have been awarded DOE funds.

Recommendation 18

EPA and DOE can collaborate to set up independent Community Advisory Groups attached to each of the hydrogen hub communities following the EPA's Superfund CAG model and provide technical assistance grants and Technical Assistance Services for Communities. TAG grants allow community groups to hire their own technical advisor to interpret and explain technical reports, site conditions, and the hub's proposed actions.

According to the EPA, these grants serve an important purpose: "*Such independent technical assistance helps the community voice its concerns and preferences on site issues and participate more substantively in site decisions*." The TASC program "*provides independent assistance through an EPA contract to help communities better understand the science, regulations and policies of environmental issues and EPA actions. Under the TASC contract, a contractor provides scientists, engineers and other professionals to review and explain information to communities*." Both of these programs could provide vital resources for supporting communities in understanding the complexity of carbon management projects such as hydrogen hubs, direct air capture hubs, and other carbon management projects.

Recommendation 19

Prohibit the use of non-disclosure agreements and other forms of non-disclosure related to all aspects of a project and all levels of the process (i.e., concepts, proposals, review, permitting, etc.). EJ organizations, community stakeholders and rights holders such as Tribal nations, should not be required to participate in NDAs as a condition of community benefits plans or for access to information or potential community benefits agreements. These tools can create the appearance or threat of coercion to people who have a right to express concerns, questions, or opposition to projects whose risks or uncertainties are not fully understood or disclosed.

Recommendation 20

Project proponents must outline a process and timeline for responding to community concerns and outline a grievance response process that is referred to an Ombudsman or CEQ for adherence to best practices and federal guidance on meaningful public participation processes for EJ communities.

Recommendation 21

All recipients of the DOE's hydrogen hubs grants should provide a comprehensive record of every public meeting and public engagement the hydrogen hubs conducted to date. This should include the lists of registered participants, a recording or minutes of the meeting proceedings, and a full record of the

comments and questions raised by members of the public along with corresponding responses. The DOE OCED program should also share the complete list of questions and responses received to date regarding hydrogen hub projects submitted directly to DOE to the following H2Hubs program's points of contact with DOE at: Engage_H2Hubs@hq.doe.gov and specific H2Hub, points of contact at: AppalachianH2Hub@hq.doe.gov; CaliforniaH2Hub@hq.doe.gov; GulfCoastH2Hub@hq.doe.gov; HeartlandH2Hub@hq.doe.gov; MidAtlanticH2Hub@hq.doe.gov; MidwestH2Hub@hq.doe.gov; Pacific Northwest Hydrogen Hub, PacificNWH2Hub@hq.doe.gov.

US Treasury Department's 45V Tax Credits Program

Recommendation 22

The guidance on the implementation of 45(v)[11] must uphold that the hydrogen production allowed to qualify for this tax credit is truly clean hydrogen produced via electrolysis with new renewable energy, without inducing emissions of GHG or co-pollutants on the grid.[12] The guidance must uphold the "Three Pillars" principles which state that (1) the renewable power for hydrogen production is new/incremental; (2) the power is produced and matched on an hourly basis with the hydrogen production; and (3) the power is produced in the same geographic region as the hydrogen.[13]

Recommendation 23

The final 45V standards, set by the Department of Treasury, should not include carbon offsets.

A 2024 report by the Union of Concerned Scientists identifies how distortionary use of carbon offsets can potentially subsidize more polluting, fossil-based forms of hydrogen, thus making those projects eligible for public dollars reserved for clean hydrogen.[14] Allowing an offset system to be eligible for tax credits would allow hydrogen production from fossil fuels to claim tax incentives that would otherwise be reserved for demonstrably cleaner, renewables-based hydrogen projects, creating a perverse incentive for fossil-based hydrogen producers to artificially deflate emissions from their facilities. According to UCS:

> *...because 45V is proposed to be determined by a facility's annual aggregate emissions divided by annual aggregate production, if fuels with negative carbon intensity values are included…and no offset restrictions are in place, then a polluter could simply procure whatever amount of negative carbon intensity biomethane/fugitive methane necessary to get the annual emissions rate below the 45V threshold—even if the totality of their facility emissions would otherwise render them ineligible.*

---

11. "Section 45V Credit for Production of Clean Hydrogen; Section 48(a)(15) Election To Treat Clean Hydrogen Production Facilities as Energy Property", Federal Register, National Archives, December 26, 2023, www.federalregister.gov/documents/2023/12/26/2023-28359/section-45v-credit-for-production-of-clean-hydrogen-section-48a15-election-to-treat-clean-hydrogen.
12. "Make Sure Tax Dollars Go to Hydrogen Projects That Are Truly Clean," Earthjustice, Accessed July 10 2024, https://earthjustice.org/action/make-sure-tax-dollars-go-to-hydrogen-projects-that-are-truly-clean.
13. "45V EXEMPTIONS NEED STRONG GUARDRAILS TO PROTECT CLIMATE, GROW HYDROGEN INDUSTRY," Energy and Innovation Policy & Technology LLC, February 2024; "CAC White House Letter: Hydrogen—NRDC, "Natural Resources Defense Council, email, June 16, 2023, www.nrdc.org/sites/default/files/2023-11/climate-groups-3-pillars-wh-20230616-letter.pdf/;"Earthjustice Testimony for Treasury Public Hearing Section 45 Credit for Production of Hydrogen," Earthjustice, March 25, 2024, earthjustice.org/wp-content/uploads/2024/03/45v-public-hearing-testimony.pdf/;"45V Tax Credit: Three-Pillars Impact Analysis," Evolved Energy Research, revised June 23 2023, www.evolved.energy/post/45v-three-pillars-impact-analysis.
14. "The Serious Risks around Treatment of Biomethane in 45V," The Equation, Union of Concerned Scientists, February 2, 2024. https://blog.ucsusa.org/julie-mcnamara/the-serious-risks-around-treatment-of-biomethane-in-45v.

Recommendation 24

Hydrogen produced from methane caused by industrial pollution practices (e.g., from factory farms or from oil and gas leaks) should be excluded from eligibility for the 45V tax credit.

Recommendation 25

Incorporate criteria air pollution emissions in full life cycle analysis of hydrogen projects. Categorizations of biomethane and fugitive methane emissions in the 45V tax credits can drive public funds to polluting, fossil-based hydrogen production methods. There are several proposals to use coal mine methane as a feedstock to produce hydrogen including one in Pennsylvania that proposes to use fugitive methane emissions from Appalachian coal beds.[15]

Recommendation 26

Monitoring and evaluation of the DOE Clean Hydrogen Cost Standard[16] should be ongoing and determine whether federal investments continue**.** BIL charges the DOE's Clean Hydrogen Research and Development Program to establish cost standards for hydrogen through research, development, and demonstration to commercialization and deployment.[17] If they are not able to achieve specific cost-related goals, private-sector investment may view this sector as too risky.

Recommendation 27

All changes to DOE's Clean Hydrogen Research and Development Program[18] should be transparent and shared with EJ stakeholders and the public. Any effort to adjust the Clean Hydrogen Cost Standard must be done with public and uncompromised EJ community impact standards.

15. "CNX Plans $1.5B Hydrogen Fuels Plant at Pittsburgh Airport, but Wants Federal Tax Credit to Build It," AP News. May 15, 2024. https://apnews.com/article/hydrogen-climate-pennsylvania-cnx-coal-methane-biden-f76df1d9694932d0810a261ca8ca0588.
16. "Clean Hydrogen Production Standard Guidance," Hydrogen Program, www.hydrogen.energy.gov/library/policies-acts/clean-hydrogen-production-standard.
17. "U.S. National Clean Hydrogen Strategy and roadmap", United States Department of Energy, Accessed July 10, 2024. www.hydrogen.energy.gov/pdfs/us-national-clean-hydrogen-strategy-roadmap.pdf.
18. "DOE Hydrogen and Fuel Cells Program: About the Hydrogen and Fuel Cells Program," Hydrogen Program, Accessed July 19, 2024, www.hydrogen.energy.gov.

III. Carbon Capture (Utilization) & Storage, Direct Air Capture, and Bioenergy with Carbon Capture and Storage

The WHEJAC Carbon Management Workgroup Recommendations Report (November 2023) detailed several recommendations pertinent to the environmental justice concerns and risks associated with CCS and CCUS in disadvantaged communities. The report highlighted the co-location of overburdened communities with CCS/CCUS infrastructures and proposed projects.[19] This proximity requires that these projects address the cumulative impacts, risks, and uncertainties for EJ communities that are host to these projects. There are inherent risks and uncertainties in every aspect of the implementation of these technologies that should be accounted for and fully disclosed to communities that are directly affected. It is important to reiterate the key recommendations that the first WHEJAC report laid out that all CCS/CCUS and DAC projects analyze, disclose, and publicly report on the environmental, public health, and cumulative impacts of all carbon management-related projects: *"Address the following topics: ecological and environmental impacts (air, water, soil), human and public health risks and impacts, cumulative impacts, explosion and seismic risks, full life cycle assessments of greenhouse gas emissions outcomes, and co-pollutant emissions, among other topics."*[20]

Recommendation 1

All CCS, CCUS, DAC, and BECCS projects should analyze and publicly disclose the ecological and environmental impacts (air, water, soil), human and public health risks and impacts, cumulative impacts, explosion and seismic risks, full life cycle assessments of greenhouse gas emissions outcomes, and co-pollutant emissions related to these projects. These risks and impacts must be accounted for in the early phases of scoping of projects, in any community benefit plans and be included in the permitting of projects and publicly reported.

CCS, CCUS, DAC, and BECCS all require significant storage infrastructure with associated risks such as contamination of aquifers, seismic activity, leaks that can harm public health and the environment, and storage leakage that can impact the efficacy underlying the stated purpose of these projects, which is premised on permanent storage. *"Companies plan to inject carbon dioxide into porous rock formations that are usually filled with brine containing not only extremely high salt levels but often heavy metals, hydrocarbons and radioactive elements. Brine leaks, therefore, can be even more worrying than the escape of CO_2."*[21] Some of the key problems with injecting carbon into these wells include:

- There could be undocumented wells that are not plugged properly and can lead to leaks or accidents.[22]
- Underground injection can lead to dangerous seismic activity. For example, wastewater injections have also caused earthquakes, as the pressurized fluid interacts with faults. Carbon dioxide would be injected as a "supercritical" fluid that has properties of both a gas and liquid. In West Texas, the

19. Yukyan Lam et al, "Analysis of Proposed Carbon Capture Projects in the US Power Sector and Co-Location with Environmental Justice Communities," September 2023, The New School: Tishman Environment and Design Center, https://static1.squarespace.com/static/5d14dab43967cc000179f3d2/t/64f9df23792cce775bf32100/1694097188142/Map_Proposed+CCS+Projects+-+Two+Pager_CURRENT.pdf.
20. WHEJAC Carbon Management Report, 2023, p. 14.
21. Nicholas Kusnetz, "Companies Are Poised to Inject Millions of Tons of Carbon Underground. Will It Stay Put?" Inside Climate News, March 20, 2024. https://insideclimatenews.org/news/20032024/louisiana-abandoned-oil-gas-wells-carbon-dioxide-storage.
22. "LA Orphaned and Abandoned Wells," Experience.arcgis.com. Accessed July 10, 2024. https://experience.arcgis.com/experience/5efe2b10ca87493d9ae1705bde260e4f.

Railroad Commission of Texas sought to limit oil and gas well injections because injecting saltwater back into the ground "is likely contributing to recent seismic activity."[23]

- Current regulations do not require companies to do more than check the record to confirm the location and status of old wells, and it is at the discretion of the regulator whether companies must perform tests on the wells to make sure the records are correct.
- The "area of review" that companies must survey around wells can extend far beyond the designated zone of impact for the plume of carbon dioxide.
- When carbon dioxide mixes with underground salt water, it can create corrosive carbonic acid and corrode pipes used for extracting oil and gas.
- There are unclear state, federal, and local regulations that can lead to confusion about jurisdiction and oversight that can impede rigorous monitoring, enforcement, and emergency preparedness.[24]
- In February 2020, a pipeline carrying compressed carbon dioxide mixed with hydrogen sulfide ruptured near the small town of Satartia, Mississippi. The gas released was heavier than air and led to evacuations and hospitalizations.[25]

Recommendation 2

All carbon management-related storage and pipeline infrastructure must disclose to impacted areas any potential risks associated with these projects and extend the area of impact that is considered an impact zone. Regulating authorities must require the independent verification of records used to report the status of wells prior to new carbon storage projects being undertaken.

Recommendation 3

The regulatory and statutory requirements for carbon storage sites must be well defined and publicly clarified prior to awarding carbon management projects tax incentives and grants. Critical questions include who owns underground pore space? What are the requirements for industries seeking to store carbon underground and also plan to extract oil or gas on the same land? Who pays for remediation if CO_2 wells create future problems? And who has primacy for permitting and public notification?

There are a myriad of programs within the purview of the DOE's Fossil Energy and Carbon Management Office (DOE spreadsheet of carbon projects) and OCED that are currently receiving public funding but for which there is little to no disclosure of the environmental impacts and risks and, more specifically, the environmental justice impacts of these projects. These projects include:

- CarbonSafe Projects Phase II (11 facilities, $93M)
- CarbonSafe Phase III (12 projects, $251M)
- CarbonSafe Validation & Testing
- Carbon Capture Sequestration Demonstration ($2.5B, 6 facilities)
- Front-End Engineering Design (FEED) studies

---

23. Carlos Nogueras Ramos, "Texas Regulators Limit Oil and Gas Disposal Wells in Bid to Reduce Earthquakes in West Texas," The Texas Tribune, January 10, 2024, www.texastribune.org/2024/01/10/west-texas-produced-water-wells-fracking-oil-gas.
24. Shelby Webb, "Why Injecting CO_2 Underground Is a Legal Morass," E&E News by POLITICO, April 17, 2023, www.eenews.net/articles/why-injecting-co2-underground-is-a-legal-morass.
25. Wesley Mathews, "Failure Investigation Report—Denbury Gulf Coast Pipeline," U.S. Department of Transportation, May 26, 2022, www.phmsa.dot.gov/news/phmsa-failure-investigation-report-denbury-gulf-coast-pipelines-llc.

- Carbon Capture Large Scale Pilots
- Direct Air Capture Hub Projects ($1.2B, 2 facilities)

Each of these projects presumably have permitting and reporting requirements that have been, or are anticipated to be, granted by state and federal authorities. The EPA has outlined some of the existing and regulatory and statutory authorities that govern various aspects of CCS projects.[26] Currently, it is difficult to discern what types of permits are in place for the demonstration, pilot, and research projects already awarded DOE grants.

Recommendation 4

The EPA and DOE should clarify which permits pertain to existing CCS projects already funded by DOE including large-scale demonstrations, pilots, and FEED studies. They can also make available links to the permits that cover these projects and clarify any regulatory requirements that these projects may trigger in the future.[27] The EPA and DOE can coordinate to make this information available publicly on the websites that list summaries of regulatory and statutory authority governing each project and project phase, along with key points of contact for respective agencies. Each carbon management project should specifically report the co-pollutant emissions along with the GHG emissions that come from the construction and operation of CCS, CCUS, DAC, and BECCS facilities, including the disclosure of the fuel source that powers the CCS equipment.

Recommendation 5

EPA and DOE must strengthen, clarify, and enforce their monitoring, reporting, and verification (MRV) requirements for carbon capture projects. MRV requirements should be consistent and enforceable for all carbon capture projects, including demonstration, pilot and research and development programs.[28] More specifically, the EPA, using their regulatory oversight powers, and DOE, in their award agreements, should include specific monitoring strategies or technologies that are required for reporting purposes and these requirements should be included as a condition of funding. Recipients of any public funding for carbon capture projects must commit to explicit monitoring timelines and activities, detailing their plans for monitoring and testing. For example, projects should be required to explicitly state how they will quantify and report leaks in the event a leak occurs. Agencies should also require third-party verification and auditing of MRV data on a regular basis.

The DOE is currently funding a more than 60 carbon capture-related projects. Funding for these projects often accrues to industries that claim carbon capture rates of 90 percent or more. The 2021 GAO report on carbon capture explicitly examined the effectiveness of the DOE's oversight of CCS projects stating:

> *First, DOE's decisions to commit to fully funding coal CCS projects upon their initial selection, and to negotiate the cooperative agreements for those projects on an accelerated schedule, increased the risk of funding projects that were unlikely to succeed. By amending its selection process to incorporate a down-selection as well as reserving adequate time for negotiations—as it did for the industrial CCS demonstration and subsequent large-scale pilot project program—DOE could*

26. U.S. EPA, "Regulatory and Statutory Authorities Relevant to Carbon Capture and Sequestration (CCS) Projects," www.epa.gov/system/files/documents/2023-10/regulatory-and-statutory-authorities-relevant-to-carbon-capture-and-sequestration-ccs-projects.pdf.
27. Ramesh Nair, Executive Summary, 2022.
28. Preet Bains, "Flaws in EPA's Monitoring and Verification of Carbon Capture Projects." Environmental Integrity Project, December 14 2023, https://environmentalintegrity.org/wp-content/uploads/2023/12/EIP_Report_CarbonCapture12.14.23.pdf.

better ensure that in any future CCS demonstration program it will select and negotiate projects more likely to succeed.[29]

The GAO recently released a report detailing the audit results from CCS, CCUS, and DAC projects funded by the DOE from 2018 to 2023.[30] The report specifically examined the DOE's risk screenings and risk management of these projects, stating "*These risk screenings evaluate a project across several categories, including financially, technically, and management oversight. This screening determines the level to which the project is to be evaluated and monitored, with higher risk projects potentially requiring further screening and heightened levels of oversight.*" (page 12) The report found that the DOE did not adequately document or address project risks and secondly there were concerns about the agency's procedures for awarding funds to "higher risk" projects that were not deemed technically acceptable by reviewers.[31] In the example case cited in the report, a high-risk project had not demonstrated the carbon storage capacity of the site but was still awarded funding. This report makes clear the importance of determining and disclosing the associated project risks that may arise prior to awarding public funding and prior to initiating community engagement processes. There is also a need to continue the GAO's role in monitoring and assessment of DOE's performance with respect to risk screenings.

Recommendation 6

The DOE should verify and publicly report on an annual basis the actual net carbon capture rates of all projects they've funded. Any projects not meeting their stated capture rates should be put on hold and funding halted pending further review and verification of the capture feasibility.

Recommendation 7

The GAO should conduct a follow-up review of the performance of carbon capture projects that have been funded by taxpayer money to date, including the projects at coal plants that it reviewed in its previous report as well as projects at various industrial plants like the Decauter, Illinois, BECCS Project,[32] which was recently reported as having only captured 10–12 percent of its CO_2 emissions. This report should be comprehensive and include a review of the funding allocated for demonstration projects, pilot projects, FEED projects, and the regional direct air capture hubs.

Recommendation 8

DOE and the chairs of the CCS Task Forces must meaningfully engage and incorporate the expertise and input of environmental justice organizations and add additional members that represent EJ community stakeholders on the two new task forces set up to inform the roll out of CCUS permitting on federal and non-federal lands.[33] The MOU between CEQ & DOE on CCUS permitting highlights the importance of

---

29. Frank Rusco, "Carbon Capture and Storage Actions Needed to Improve DOE Management of Demonstration Projects Report to Congressional Committees United States Government Accountability Office," Government Accountability Office, December 2021, p. 24. www.gao.gov/assets/gao-22-105111.pdf.
30. Frank Rusco, "Decarbonization Opportunities Exist to Improve the Department of Energy's Management of Risks to Carbon Capture Projects Report to Congressional Committees United States Government Accountability Office," Government Accountability Office, May 2024. www.gao.gov/assets/gao-24-106489.pdf.
31. Rosco, "Decarbonization," 2024.
32. Johnathan Hettinger, "Despite Hundreds of Millions in Tax Dollars, ADM's Carbon Capture Program Still Hasn't Met Promised Goals," Investigate Midwest, November 19, 2020.https://investigatemidwest.org/2020/11/19/despite-hundreds-of-millions-in-tax-dollars-adms-carbon-capture-program-still-hasnt-met-promised-goals.
33. "CEQ Announces Members of Task Forces to Inform Responsible Development and Deployment of Carbon Capture, Utilization, and Sequestration | CEQ," The White House, March 24, 2023. www.whitehouse.gov/ceq/news-updates/2023/03/24/ceq-announces-members-of-task-forces-to-inform-responsible-development-and-deployment-of-carbon-capture-utilization-and-sequestration.

incorporating meaningful representation of environmental justice communities in task forces and interagency groups where measures pertaining to carbon management measures have implications for disadvantaged communities.[34] Yet the composition of the task forces does not adequately represent EJ communities. Of a total of 35 members of the *Carbon Dioxide Capture, Utilization, and Sequestration Federal Lands and Outer Continental Shelf Permitting Task Force,* only two organizations seem to explicitly represent environmental justice stakeholders, while nine private-sector energy companies sit on this task force. Similarly on *the Carbon Dioxide Capture, Utilization and Sequestration Non-Federal Lands Permitting Task Force* there seems to be only one or two environmental justice stakeholder representatives, while there are eight private sector industry organizations represented.

This lack of EJ representation on a topic of such significance for EJ communities should be corrected, especially given that the charge of these task forces, delineated under the USE IT ACT includes:

> *To support the efficient, effective, and responsible permitting of CCUS projects, the task forces shall also consider and develop recommendations to address community concerns regarding the climate benefits and environmental justice implications, including public health and safety, of CCUS. In the development of these recommendations, the task forces will consider and identify recommended mechanisms to ensure just treatment and meaningful involvement of impacted communities.*

The current composition of these task forces leans toward the vested interests of industries, universities, and third parties that stand to monetarily gain from federal investments in the carbon management sector. For example, Occidental is a member of the federal lands task force, and they are also recipients of DOE's Direct Air Capture grant.[35]

Recommendation 9

CEQ, DOE, and OMB should do a thorough review of any conflicts of interest of current and future members of the CCS task forces and exclude any members from the task force that have the potential to benefit, either directly or indirectly, from decisions or recommendations made by the task force. The current process described by CEQ to address potential conflicts of interest are not sufficient to prevent the appearance or potential for undue influence on the taskforces.[36]

There are also critical questions about the efficacy and transparency of tax credits that are targeted to support CCS, such as 45Q. It is important to strengthen the monitoring, verification, and reporting requirements that ensure that public taxpayer dollars are being used appropriately and EJ communities are not further burdened. An investigation by the U.S. Treasury Inspector General for Tax Administration

---

34. Brenda Mallory, "Memorandum of understanding Between the CEQ and DOE," October 31, 2023, www.energy.gov/sites/default/files/2023-11/CEQ-DOE-MOUpermittingtaskforces-signed-20231101(v2).pdf.
35. "1PointFive Selected for U.S. Department of Energy Grant to Develop South Texas Direct Air Capture Hub," Oxy, August 11, 2023, www.oxy.com/news/news-releases/1pointfive-selected-for-u.s.-department-of-energy-grant-to-develop-south-texas-direct-air-capture-hub.
36. Per email communication May 8, 2024, to the Carbon Workgroup as: Congress instructed that the membership of the CCUS Task Forces should reflect a range of representatives and perspectives on CCUS permitting and development. The Department of Energy (DOE) is administering the CCUS Task Forces pursuant to a Memorandum of Understanding between CEQ and DOE. As part of DOE's administrative responsibilities, DOE ethics officials work with the members of the CCUS Task Forces to identify their outside interests and to counsel them on their legal and ethical obligations.

that found fossil fuel companies improperly claimed nearly $1 billion in clean air tax credits.[37] The resultant report highlighted important recommendations to improve the requirements for these tax credits.[38]

Recommendation 10

The IRS should approve a method other than the EPA's MRV process to substantiate secure geologic storage of carbon dioxide and to account for the volume of carbon dioxide that has been securely stored. This information should be publicly available and disclosed on an annual basis.

Bioenergy with Carbon Capture and Storage

Bioenergy with carbon capture and storage is a form of CCS that is based on several assumptions about the carbon cycle that can produce carbon neutrality or negative emissions. The logic behind the claim of negative emissions lays in taking organic matter like trees, which naturally remove carbon dioxide from the air, combusting them at an industrial scale plant to produce energy, and then capturing and storing the resulting emissions using CCS technologies. This logic only works if the organic matter like forests is additional to existing or anticipated plant growth if the trees had not been used for BECCS. If the plants are not new, the overall emissions balance could be, at best, near zero. But even the net zero claim behind BECCS is the subject of contention as this process is energy intensive and can leak carbon dioxide throughout the entire system. One of the most controversial related to BECCS is the source of proposed future additional biomass. In a report by the European Academies' Science Advisory Council, they warn that:

> *The role of bioenergy with carbon capture and storage (BECCS) remains associated with substantial risks and uncertainties, both over its environmental impact and ability to achieve net removal of CO_2 from the atmosphere. The large negative emissions capability given to BECCS in climate scenarios limiting warming to 1.5°C or 2°C is not supported by recent analyses, and* ***policymakers should avoid early decisions favoring a single technology such as BECCS.***[39]

The use of precious natural ecosystems like forestlands or even agricultural lands to burn in BECCS systems could have devastating consequences for food production, increased use of fertilizers, ecosystems biodiversity, increases in health harming air pollution, human rights and indigenous sovereignty and water usage.

In a 2022 report by FERN[40] they detailed six major issues with BECCS, including (1) increases in emissions, (2) technical barriers, (3) use of lands that competes with food production (4) biodiversity loss, (5) increases water usage, (6) creates barriers for energy transitions. BECCS entails social and economic costs as well as risks of carbon leakage and biodiversity loss. A report by NRDC in 2021[41] examined the emissions

---

37. "Menendez Releases Inspector General Investigation Finding Fossil Fuel Companies Improperly Claimed Nearly $1B in Clean Air Tax Credits | U.S. Senator Bob Menendez of New Jersey," The Newsroom of Senator Menendez, April 30, 2020, www.menendez.senate.gov/newsroom/press/menendez-releases-inspector-general-investigation-finding-fossil-fuel-companies-improperly-claimed-nearly-1b-in-clean-air-tax-credits.
38. J. Russell George, "INSPECTOR GENERAL for TAX ADMINISTRATION," Department of Treasury, April 15, 2020, www.menendez.senate.gov/imo/media/doc/TIGTA%20IRC%2045Q%20Response%20Letter%20FINAL%2004-15-2020.pdf.
39. "Forest Bioenergy and Negative Emissions Update," European Advisories Science Advisory Council, December 17, 2018, https://easac.eu/projects/details/carbon-neutrality.
40. "Six Problems with BECCS," FERN, 2022, www.fern.org/fileadmin/uploads/fern/Documents/2022/Six_problems_with_BECCS_-_2022.pdf.
41. "Uncaptured Biogenic Emissions of BECCS Fueled by Forestry Feedstocks," NRDC, September 2021, www.nrdc.org/sites/default/files/beccs-emissions-study-report.pdf

from each step in the biomass supply chain and specifically looked at the uncapturable emissions from a scenario in which pellets made of wood from pine plantations in the southeastern United States fuel a BECCS operation in the United Kingdom. According to the report:

> *The results reveal that a large fraction of the life cycle CO_2 emissions occur offsite—away from the biomass power station—and are thus uncapturable by the addition of CCS at the smokestack. These offsite and uncapturable emissions equal approximately 60% of the stack emissions at the plant.*[42]

This study demonstrates that not only is BECCS not carbon negative, it actually leads to significantly more carbon emissions in the grid than the current average, so it's making things substantially worse both from a climate mitigation perspective and an environmental justice perspective due to the localized impacts on air pollution, water use, etc.

Additional concerns relating to BECCS include: (1) deforestation, habitat destruction, and displacement of communities; (2) increased water pollution from agrochemicals; (3) soil erosion, nutrient depletion, and degradation of soil quality; (4) release of particulate matter, nitrogen oxides (NOx), and volatile organic compounds during biomass combustion; (5) indirect deforestation and increased greenhouse gas emissions due to unsustainable biomass sourcing; (6) leakage from underground storage sites, potentially releasing stored CO_2 into the atmosphere; (7) occupational hazards, exposure to hazardous materials, and accidents related to biomass handling and carbon capture processes.[43]

One of the signature BECCS programs funded by the federal government is the Archer Daniels Midland ethanol plant, which started one of the first and only industrial scale BECCS plants in Decatur, Illinois, called the Illinois Industrial Carbon Capture and Storage Project.[44] This BECCS project started in 2017 with $141.1M from DOE.[45] Although it purported to capture 95 percent of emissions, the actual annual emissions stored are about half of those projected—around 519,000 tons, according to the EPA, resulting in a capture rate of approximately 10–12 percent.[46]

Recommendation 11

DOE should halt further funding to BECCS-related projects until a full accounting of the environmental risks, full supply chain analysis of carbon emissions and efficacy of existing BECCS projects is undertaken. These analyses should include cumulative impact assessments for BECCS projects, considering potential risks, such as land use change, water usage, air pollution, soil degradation, and impacts on biodiversity and specifically address potential disproportionate impacts on vulnerable and disadvantaged communities.

---

42. Sasha Stashwick, "Report: Leading Approach to BECCS Worsens Climate Change," NRDC, October 13, 2021, www.nrdc.org/bio/sasha-stashwick/report-leading-approach-beccs-worsens-climate-change.
43. Richard Martin, "The Dubious Promise of Bioenergy plus Carbon Capture," MIT Technology Review, January 8, 2016, www.technologyreview.com/2016/01/08/247100/the-dubious-promise-of-bioenergy-plus-carbon-capture.
44. "Carbon Capture and Storage," ADM, 2024, www.adm.com/en-us/standalone-pages/adm-and-carbon-capture-and-storage.
45. Scott McDonald, "Illinois Industrial Carbon Capture & Storage Project Eliminating CO 2 Emissions from the Production of Bio Fuels—A 'Green' Carbon Process," Illinois Industrial Carbon Capture & Storage, July 11 2017, www.energy.gov/sites/prod/files/2017/10/f38/mcdonald_bioeconomy_2017.pdf.
46. Johnathan Hettinger, "Despite Hundreds of Millions in Tax Dollars, ADM's Carbon Capture Program Still Hasn't Met Promised Goals." Investigate Midwest, November 19, 2020, https://investigatemidwest.org/2020/11/19/despite-hundreds-of-millions-in-tax-dollars-adms-carbon-capture-program-still-hasnt-met-promised-goals.

Recommendation 12

Allocate research and development funding to advance the understanding of the environmental and health impacts of BECCS. This research should prioritize the evaluation of potential risks to EJ communities, including the consideration of life-cycle emissions and the long-term safety and effectiveness of carbon storage from these systems.

IV. Biochar

DOE supports the use, research, and deployment of a variety of hydrogen related biofuels under the Office of Energy Efficiency and Renewable Energy's Bioenergy Technologies Office.[47] Many of these biofuels have inherent risks and associated environmental justice impacts. (See Appendix B for detailed biochar risks). Biochar is a form of biofuel that is typically used as a soil amendment and is defined by the U.S. Department of Agriculture as, "Biochar is a stable solid, rich in carbon that is made from organic waste material or biomass that is partially combusted in the presence of limited oxygen."[48] According to a presentation from DOE Bioenergy Technologies Office from February 15, 2024, DOE outlined the following as *Management Practices for Enhancing Soil Carbon* regarding biochar:

- Produced from wide variety of feedstocks via pyrolysis or gasification.
- Properties of the biochar can be tailored to a specific application by using the appropriate feedstock.
- Concerns: Life cycle assessment issues, cost, funding sources of support, C–sequestration potential and residence time, heavy metals in contaminated soils, and methods to apply biochar.[49]

Despite these concerns (i.e., heavy metals in soil) regarding biochar, there is a significant lack of consideration of cumulative impacts and overall public health risks related to the financing of biochar projects.

The following are some of the potential health risks related to biochar:

Inhalation of Particulate Matter. During the production and handling of biochar, there is a potential risk of inhaling particulate matter, which can be an issue for workers or individuals in close proximity to biochar production facilities. Inhalation of fine particles can have adverse respiratory effects. Formation of carcinogens indoors by surface-mediated reactions of nicotine with nitrous acid, leading to potential thirdhand smoke hazards.[50] Additionally, the production of biochar involves the release of gasses such as carbon monoxide, methane, and volatile organic compounds, which can contribute to air pollution if not properly controlled. Emissions can occur during the pyrolysis process or from storage and transportation of biochar.

Occupational Hazards. Workers involved in the production, handling, or application of biochar may be exposed to hazards such as dust, high temperatures, and potential contact with contaminants. These risks can also include respiratory issues, skin irritations, and eye injuries. Occupational safety guidelines and protective measures should be implemented to ensure worker safety.[51]

---

47. "Bioenergy Technologies Office," Department of Energy, 2024, www.energy.gov/eere/bioenergy/bioenergy-technologies-office.
48 ."Biochar | USDA Climate Hubs, U.S. Department of Agriculture," 2024, www.climatehubs.usda.gov/hubs/northwest/topic/biochar.
49. Mark Elless, "US Department of Energy's Interest in Soil Carbon and Biochar," U.S. Department of Energy, February 15, 2024, https://biochar-us.org/sites/default/files/presentations/USBI-NABC2024-Mark-Elless-US-Department-of-Energy-Interest-in-Soil-Carbon-and-Biochar-no-comments.pdf.
50. Proceedings of the National Academy of Sciences, 109(16), 10779-10784.
51. Source: Giese, M., et al., "Risk Assessment of Biochar-based Products: Occupational Exposure and environmental Fate," *Science of the Total Environment*, 668, (2019): 104–113.

Contaminant Transfer. If biochar is produced from contaminated feedstocks or if it comes into contact with contaminants during handling or storage, there is a potential risk of transferring those contaminants to soils or water sources upon application. This can have implications for public health if the contaminants pose risks to human exposure. Proper quality control measures and adherence to regulations are important to minimize this risk.[52]

Allergenic Potential. Some individuals may be sensitive or allergic to certain types of biochar or components used in its production. This can lead to allergic reactions or respiratory issues upon exposure.[53]

Recommendation 1

To ensure that the benefits and opportunities associated with biochar production and application are distributed equitably and that potential environmental and public health risks are minimized. The federal government should adopt a comprehensive approach that prioritizes environmental justice considerations in permitting processes related to biochar facilities.

Recommendation 2

Require robust cumulative impacts assessments as a core component of permitting processes and decision-making for biochar production facilities and projects. Additionally, mandate evaluation of potential environmental and health impacts of biochar facilities on nearby communities, particularly those that are historically marginalized or vulnerable, and impacted by disproportionate burdens of nearby industrial activities to ensure a thorough understanding of the potential risks associated with biochar production.

Recommendation 3

Develop local- and state-level permitting and regulatory guidance for biochar projects. Federal agencies funding or overseeing biochar projects should collaborate with local and state authorities to develop comprehensive permitting and regulatory guidance for biochar production and application. This collaboration can ensure consistent standards and streamlined processes across jurisdictions, including the assessment of cumulative impacts. Additionally, federal agencies like DOE can mandate and provide robust oversight and accountability with sustainable sourcing and production practices for biochar.

Recommendation 4

The federal government should facilitate meaningful community engagement throughout the permitting process for biochar facilities. This includes providing accessible and clear information about proposed biochar projects, public hearings, and opportunities for public comment and a fair and transparent process surrounding community consent in decision-making processes.

Recommendation 5

The federal government should establish policies and guidelines to address and mitigate any disproportionate burdens or adverse impacts of biochar production and application on marginalized communities. This can include setbacks and buffer zones (guardrails) to protect sensitive risk indicators such as residential areas, schools, and healthcare facilities.

---

52. A. Mukherjee, A., et al., “Impact of biochar application on fertility of a southeastern coastal plain soil,” Soil Science Society of America Journal, 2014, 78(2), 533-544.

53. B. Chen, et al., “Effects of biochars derived from different feedstocks on allergic hypersensitivity in mice,” Chemosphere, 2011, 85(6), 932-939.

Examples of Communities in Opposition to Biochar Projects

Biomass Sawmill Proposal, North Memphis, TN

A proposed project by Memphis Urban Wood[54] for a biomass sawmill campus in Memphis, Tennessee, was opposed by the largely African American community in North Memphis. This community raised concerns for a proposed biomass sawmill campus from a joint applicant including a local nonprofit and for-profit entity that initially proposed to utilize biochar with wood waste (i.e., "recycled trees"). Impacted community members (largely senior population) expressed grave concerns surrounding potential air pollution in an already overburdened frontline community as well as fears of potential water, soil, and noise pollution and rodents from idle lumber.[55] The public record of comments submitted to the local land use control board included six letters of support[56] and 21 letters of concern and opposition. The public comments raised concerns about ineffective community engagement, citing how the residents directly across the street from the proposed project had not been notified or engaged. The local health department rejected the applicant's request for the use of biochar included in the original application.[57] The applicant requested a special use permit for an industrial development involving the processing of wood salvaged from tree removal. The resulting products would include lumber, wood compost, and biochar. However, there were discrepancies regarding the accurate description of biochar as a form of carbon removal rather than carbon capture. The applicant was cited for occupying the site without a permit, and there were uncertainties regarding the proposed composting and the use of a sawmill machine. Overall, there was a lack of transparency in the application process and after several months of opposition by both community members, community-based organizations, and local environmental justice organizations, the applicant withdrew their application, which prompted a five-year waiting period before the applicant can submit another application associated with this particular project.[58]

Aries Biosolids Plant, Newark, NJ

In 2021, Aries Clean Technologies proposed a gasification plant in Newark, New Jersey, to process sludge for biochar production. In 2022, the company withdrew its plan to construct the facility following opposition from local residents.[59] The proposed facility aimed to process up to 430 tons of wastewater "biosolids" per day, including human feces, and convert them into biochar. Despite assurances from company regarding minimal odors and emissions, residents expressed concerns about the cumulative

---

54. "Memphis Urban Wood (One-Page)," The Works, Inc, 2024, https://theworkscdc.org/memphis-urban-wood.
55. Bria Bolden, "North Memphis Residents Fight against Proposed Wood Processing Site," Action News 5, February 6, 2024, www.actionnews5.com/2024/02/06/north-memphis-residents-fight-against-proposed-wood-processing-plant.
56. Some of the support letters were from organizations who had direct ties to the project and stood to benefit directly from the award.
57. Gus Carrington, "Company Reportedly Pulls Proposal for Biomass Facility in North Memphis," Local Memphis, March 18, 2024, www.localmemphis.com/article/news/local/company-reportedly-pulls-proposal-for-biomass-facility-in-north-memphis/522-75627e2e-7e88-4f78-91c6-943d60786077.
58. Micaela A. Watts, "Contested Biomass Wood Upcycling Facility Withdrawn from Memphis City Council Consideration," The Commercial Appeal, April 24, 2024, www.commercialappeal.com/story/news/local/2024/04/24/biomass-north-memphis-proposal-withdrawn/73430920007.
59. TAP Into Staff "Developer Drops Plans for Controversial Processing Facility," TAP into Newark, November 30, 2022, www.tapinto.net/towns/newark/sections/development/articles/developer-drops-plans-for-controversial-processing-facility.

impacts of a new facility adding to the waste processing facilities and air pollution in the area.[60] Aries attempted to skirt local zoning rules by changing the name of the sludge processing to "biosolid" processing.

Recommendation 6

Federal agencies, including but not limited to the DOE and EPA, should provide guidance (including applicable federal laws, policies, rules, protocols, and procedures) to local authorities, such as (but not limited to) land use boards (and other planning and development authorities), environmental agencies, and health departments, regarding the potential impacts (including cumulative impacts) and regulatory requirements associated with biochar proposals.

Recommendation 7

EPA should clarify the definitions of biochar, sludge, biosolids, and related materials processing to close loopholes created when companies attempt to introduce proposals under various categories or names in order to avoid local and state rules or obfuscate the nature of projects from the public and local officials.

60. Michael Warren, "Company Withdraws Plan for Sludge Plant in Newark," NJ Spotlight News, November 22, 2022. www.njspotlightnews.org/2022/11/ironbound-project-stopped-aries-clean-technologies-sludge-sewage; "Letter to the Newark City Zoning Board of Adjustment," Earthjustice, May 14, 2021, https://earthjustice.org/wp-content/uploads/2021-05-14_icc_brief_zba-21-21-a_brief_only.pdf.

V. EPA Underground Injection Control Class VI Permitting

The Safe Drinking Water Act and implementing EPA regulations, clearly establish requirements for public participation, addressing minimum requirements for public information, public notice, public consultation, public hearings, and public meetings; advisory groups; and responsiveness summaries. These requirements apply to the permitting of injection wells and projects, and also for delegation of primacy from EPA to states for Underground Injection Controls.[61] The EPA can take action to assure early and ongoing opportunities for public involvement in the permitting process if it believes that a proposed UIC permit "may somehow pose a disproportionately adverse effect on the drinking water of a minority or low-income population."[62] (See Appendix A for supporting information.)

In August 2023, EPA issued guidance pertaining to UIC, *Environmental Justice Guidance for UIC Class VI Permitting and Primacy*.[63] This memorandum and accompanying guidance outlined expectations for how agency staff should consider EJ in permitting and primacy evaluations. It includes information for EPA and state UIC programs on identifying communities with potential EJ concerns, enhancing public involvement during the permitting applications processes, conducting EJ assessments of potential well projects, and enhancing transparency in the permitting process.

According to the Underground Injection Control Class VI permit tracker on EPA's website,[64] the general timeline estimate for injection well permitting is approximately 25-months from application to final permit. Yet, in this timeline, only a 30- to 45-day public comment period is provided. Thus, while EPA has 24 months to review the permit, the public is only provided with one month. Applications have increased, and as of April 2024, there are 43 Class VI projects under review, with 128 well applications being reviewed, half of which were submitted in the last 12 months. Almost all are in the technical review phase; none are in the public comment phase, but it is anticipated that those public comment periods will only last 30 to 45 days.

Recommendation 1

EPA should extend public comment related to injection well permitting to at least 90 days to give the public ample time to participate, especially given the complexity and large number of UIC applications under consideration.

Recommendation 2

EPA should revise its Class VI injection rules to reflect more recent technology and conditions, given that over ten years have lapsed since the rule was adopted. EPA has also stated its intention to review its Class VI injection rules every six years. This includes reconsideration of EPA's decision to exclude carbon dioxide (CO_2) streams that are hazardous from the definition of hazardous waste and to require carbon

61. "Underground Injection Control Regulations," U.S. Environmental Protection Agency, 2015, www.epa.gov/uic/underground-injection-control-regulations; "Class VI—Wells Used for Geologic Sequestration of Carbon Dioxide," U.S. Environmental Protection Agency Office of Water, 2024, www.epa.gov/uic/class-vi-wells-used-geologic-sequestration-carbon-dioxide.
62. "EPA Legal Tools to Advance Environmental Justice," U.S. Environmental Protection Agency, Office of General Counsel, May 2022, https://nepis.epa.gov/Exe/ZyPDF.cgi/P1014WDM.PDF?Dockey=P1014WDM.PDF.
63. "Final Class VI Guidance Documents," U.S. Environmental Protection Agency, 2015, www.epa.gov/uic/final-class-vi-guidance-documents.
64. "Current Class VI Projects under Review at EPA," U.S. Environmental Protection Agency, 2023, www.epa.gov/uic/current-class-vi-projects-under-review-epa.

management injection wells to comply with all EPA rules governing Class I Hazardous Waste Injection wells.

Requirements in urgent need of revision include monitoring standards, area of review modeling, financial assurances, and molecular diffusion of hazardous waste into underground sources of drinking water, among other issues. Furthermore, in 2014, EPA revised the regulations for hazardous waste management under the Resource Conservation and Recovery Act (RCRA) to conditionally exclude CO_2 streams that are hazardous from the definition of hazardous waste.[65] This rule change meant that injection of carbon dioxide streams would no longer be required to comply with all EPA rules governing Class I Hazardous Waste Injection wells. Environmental and health issues to be addressed include the nature of injectate, considering emerging contaminants; prevention of endangerment to underground sources of drinking water; and the implications of these vulnerabilities to environmental justice communities. Importantly, EPA's authority to consider and address environmental justice in UIC permitting under the Safe Drinking Water Act and EO 12898 is through the "omnibus authority" whereby additional permit conditions are necessary to prevent the migration of fluids into underground sources of drinking water.[66] Provision of funding for technical, legal and health experts to support environmental justice communities in addressing Class VI well permitting and rulemaking is essential.

Recommendation 3

EPA should suspend issuance of UIC Class VI permits to carbon management technologies and programs until it has made a determination that permit applications for projects and wells currently under review have achieved full compliance with applicable regulations and authorities, including public participation requirements. EPA should also conduct a compliance evaluation for all Class VI wells issued to date by EPA and commence appropriate permit revocation proceedings or other actions as a result of noncompliance.

Recommendation 4

EPA should commence rulemaking for UIC Class VI operations and wells with full transparency and meaningful engagement for environmental justice communities. This should include consideration of new information available, current technology, environmental justice, public participation, and injection of carbon dioxide streams that are otherwise considered hazardous waste. Further, EPA should suspend issuance of UIC Class VI permits to carbon management technologies and programs until it has completed this rulemaking.

Recommendation 5

EPA should suspend delegation of primary enforcement authority for UIC Class VI programs until it has made a determination that each state has achieved full compliance with applicable rules and authorities, including public participation requirements. EPA should also conduct a compliance evaluation for states receiving primacy delegation to determine compliance with laws and regulations and commence withdrawal proceedings for states in noncompliance.

---

65. Ali Abazari and Michael Nasi, "EPA Conditionally Excludes CO_2 Geologic Sequestration from RCRA Regulation," JD Supra, January 8, 2014, www.jdsupra.com/legalnews/epa-conditionally-excludes-co2-geologic-73701.
66. "EPA Legal Tools to Advance Environmental Justice: Cumulative Impacts Addendum," U.S. Environmental Protection Agency, 2023, www.epa.gov/system/files/documents/2022-12/bh508-Cumulative%20Impacts%20Addendum%20Final%202022-11-28.pdf.

Recommendation 6

EPA should suspend issuance of UIC Class VI permits to carbon management technologies and programs until it has determined compliance with the SDWA UIC Omnibus Clause,[67] including the prevention of migration of fluids into underground sources of drinking water from seismic activities, lateral displacement of injection and formation fluid, and upward migration through faults and fractures. Further, through the Omnibus Clause, EPA should provide capacity and funding for environmental justice communities to retain technical, legal and health experts, and support those with lived experience expertise.

67. 40 C.F.R. § 144.52(a)(9)

VI. EPA Rule on Reducing GHG Emissions from Existing Natural Gas Fuel-Fired Stationary Combustion Turbines

In May of 2023, the EPA finalized a new rule that set carbon dioxide limits for new gas-fired combustion turbines and CO_2 emission guidelines for existing coal, oil, and gas-fired steam generating units. These new rules focused on the use of carbon capture and storage as best systems of emissions reductions.[68] The proposed rule included the use of hydrogen co-firing and CCS as Best Systems of Emissions Reduction, but the final rule excluded hydrogen as a BSER and instead relies on CCS as a BSER. The EPA also delayed release of rules that involved existing natural gas plants, which comprised a significant portion of the entire rule.[69] During the comment period, EJ organizations raised concerns about the rule regarding CCS, hydrogen co-firing, the lack of a cumulative analysis and policy, and several other issues.[70] The EPA has now opened a non-regulatory docket to gather input on a re-proposal of a rule focused on CO_2 emissions from existing natural gas plants.[71]

Recommendation 1

Carbon capture and storage and hydrogen co-firing should both be absent from the re-proposal of the rule focused on natural gas plants and a cumulative impacts analysis and policy should be included when the rule is ultimately promulgated. CCS and hydrogen co-firing should not be designated as BSERs in this new rule.

Recommendation 2

From an EJ perspective, acceptable methods of emissions reductions, or BSERs for existing natural gas plants would include: (1) improving the operational efficiency of a plant; (2) co-locating renewable energy infrastructure on a plant's premises; and (3) co-locating battery storage on a plant's premises. Unacceptable BSERs include CCS and hydrogen co-firing. The unacceptable BSERs should not be used, and the acceptable ones should be subjected to cumulative impacts analysis that ascertains which BSER will be the least harmful, or the most beneficial, to the community in which a plant using it is located. The analysis should also identify plants located in overburdened EJ communities and determine how their emissions will impact those communities. Identification of a plant sited in one of these communities should also trigger an "all of government response" intended to lower total pollution levels in and improve the economic status of the community.

---

68. "New Source Performance Standards for Greenhouse gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule," U.S. Environmental Protection Agency, Docket ID No. EPA-HQ-OAR-2023-0072, 88 FR 339390, May 23, 2023.
69. "Statement from EPA Administrator Michael S. Regan on EPA's approach to the power sector," U.S. Environmental Protection Agency, February 29, 2024, www.epa.gov/newsreleases/statement-epa-administrator-michael-s-regan-epas-approach-power-sector.
70. Several EJ organizations submitted comments on the rule. For example, *see* Tishman Environment and Design Center, New School; New Jersey EJ Alliance; Center for Earth Energy and Democracy; and Center for the Urban Environment, John S. Watson Institute for Urban Policy and Research, Kean University. *Comments on New Source Performance Standards for Greenhouse gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, U.S. Environmental protection Agency, Docket ID No. EPA-HQ-OAR-2023-0072, 88 FR 339390 (May 23. 2023),* submitted August 8, 2023, and Jennings, J., & Salgado, M. A. (2023). COMMENTS OF WE ACT FOR ENVIRONMENTAL JUSTICE AND THE CLEAN AIR FOR THE LONG HAUL COHORT, Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants Docket Number: EPA-HQ-OAR-2023-0072, www.regulations.gov/comment/EPA-HQ-OAR-2023-0072-0890.
71. "Nonregulatory Public Docket: Reducing Greenhouse Gas Emissions from Existing Gas Turbines at Power Plants," U.S. Environmental Protection Agency, March 26, 2024, www.epa.gov/stationary-sources-air-pollution/nonregulatory-public-docket-reducing-greenhouse-gas-emissions.

Recommendation 3

Cumulative impacts analysis should be incorporated into the rule to identify natural gas plants located in overburdened, disadvantaged, EJ communities.[72] If EPA designates CCS or hydrogen co-firing as a BSER, over the objections of the EJ community, then cumulative impacts analysis should be used to determine if either methodology would increase power plant-related GHG co-pollutant emissions in overburdened EJ communities. If it is demonstrated that this would occur, then the plant should not be allowed to use the BSER responsible for increased emissions, whether it is hydrogen co-firing or CCS.

Recommendation 4

If EPA believes it does not have the authority to incorporate such a cumulative impacts policy into the power plant rule, then it should perform the analysis that supports such a policy and designate to the states the responsibility of incorporating the results of the cumulative impact analysis into their state implementation plans. The results should be integrated into the implementation plans in a manner that can be determinative in limiting the use of CCS and hydrogen co-firing in EJ communities where it causes or contributes to cumulative impacts.

Recommendation 5

Identification of a plant sited in an overburdened EJ community should also trigger an all of government response that lowers total pollution levels in, and improves the economic and health conditions of, the community. Accounting for health impacts from exposures to environmental pollution and climate change should be strengthened through the application of Z Codes of the International Classification of Diseases-10 (ICD-10)[73] used to address social, economic and environmental determinants of disease.

---

72. "Power Plants and Neighboring Communities," U.S. Environmental Protection Agency, Clean Air Power Sector Programs, 2021, www.epa.gov/power-sector/power-plants-and-neighboring-communities; "Power Plants," U.S. EPA, 2021, www.epa.gov/power-sector/power-plants-and-neighboring-communities#mapping/; "Climate and Economic Justice Screening Tool," Climate and Economic Justice Screening Tool, 2024. https://screeningtool.geoplatform.gov/en/#8/0/0.
73. "ICD-10-CM," National Center for Health Statistics June 7, 2024, www.cdc.gov/nchs/icd/icd-10-cm/index.html.

VII. NEPA Permit Rules for Carbon Management Projects

Starting in 2020, National Environmental Policy Act regulations have undergone both statutory and regulatory revisions.[74] While some changes have been positive from an EJ perspective, such as restoring the requirement for a cumulative impacts analysis,[75] there are several that raise important concerns, particularly regarding whether an environmental impact statement should be required for carbon management projects. We highlight those concerns along with public participation and engagement, an issue that has remained critically important to the EJ community throughout all changes and revisions to the regulations. (See Appendix A for supporting information.)

Environmental Impact Statements

Categorical Exclusions

With a new emphasis from the government on the need "to expedite federal permitting"[76] and "accelerate environmental reviews,"[77] there is considerable concern that the utilization of environmental impact statements will be avoided for carbon management projects, notwithstanding official promises that robust involvement in the NEPA process by communities will be maintained.[78] One specific concern is spurred by a potential increase in the use of categorical exclusions due to the recent NEPA regulatory revisions, which now allow agencies to use exclusions created by other agencies,[79] as well as exclusions contained in land use plans supported by certain programmatic documents.[80] These exclusions serve to exempt projects from the full NEPA review process and therefore from the full scrutiny of communities. Further, NEPA rules condition the use of categorical exclusions when "extraordinary circumstances exist that make application of the categorical exclusion inappropriate" (see 40 CFR 1501.4 (a) and (b)).

For these reasons, in general, their use should be severely limited. In a May 7th response to the Workgroup's inquiry asking how the DOE complies with NEPA and how they anticipate using categorical exclusions, they state:

> *Categorical exclusions are occasionally applicable to the decision to provide federal funding for certain CCUS and hydrogen actions (for example, in support of early project planning and design and site characterization activities or to fund certain pilot-scale, research and development-scale work). Early project activities are typically undertaken to advance project design and establish the baseline environmental conditions in order to provide DOE with sufficient information to conduct a meaningful evaluation of impacts associated with a decision to provide funding in support of construction and operation of a project. For example, see the following categorical exclusion class*

74. "NEPA," U.S. Department of Energy, 2024; Office of Policy, "Summary of the National Environmental Policy Act," U.S. Environmental Policy Act, 2013, https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act.
75. "CEQ Restores Three Key Community Safeguards during Federal Environmental Reviews," April 19, 2022, www.whitehouse.gov/ceq/news-updates/2022/04/19/ceq-restores-three-key-community-safeguards-during-federal-environmental-reviews.
76. "FACT SHEET: Biden-Harris Administration Delivers on Permitting Progress to Build America's Infrastructure and Clean Energy Future Faster, Safer, and Cleaner," The White House, April 30, 2024, www.whitehouse.gov/briefing-room/statements-releases/2024/04/30/fact-sheet-biden-harris-administration-delivers-on-permitting-progress-to-build-americas-infrastructure-and-clean-energy-future-faster-safer-and-cleaner.
77. "FACT SHEET," The White House, 2024.
78. "FACT SHEET," The White House, 2024.
79. 40 C.F.R. 1501.4(e); *see also* National Environmental Policy Act Implementing Regulations Revisions Phase 2, 89 Fed. Reg. 35442 at 35474.
80. 40 C.F.R. 1501.4(c); *see also* National Environmental Policy Act Implementing Regulations Revisions Phase 2, 89 Fed. Reg. 35442 at 35472.

of actions in appendices A and B of subpart D of DOE's NEPA regulations at 10 CFR part 1021."[81] *The use of categorical exclusions to exempt carbon management projects that will be sited in overburdened EJ communities from the NEPA review process is unacceptable.*

Recommendation 1

Due to the potential of carbon management projects to exacerbate harms in EJ communities, categorical exclusions should never be applied to carbon management projects that will be sited in overburdened, disadvantaged EJ communities.

NEPA regulations also provide that when a proposed action that may fall within a categorical exclusion involves impacts to people of color and low-income populations in the affected environment, the agency should determine whether any extraordinary circumstances are applicable. Extraordinary circumstances are unique situations that may result in potential impacts beyond those generally arising from actions subject to the categorical exclusion. NEPA rules define "extraordinary circumstances" as "*factors or circumstances that indicate a normally categorically excluded action may have a significant effect. Examples of extraordinary circumstances include potential substantial disproportionate and adverse effects on communities with environmental justice concerns; potential substantial effects associated with climate change; and potential substantial effects on historic properties or cultural resources."*[82] Finally, Federal departments recognize that "*Executive Order 12898 does not change the legal thresholds for NEPA, including whether a Categorical Exclusion, Environmental Assessment, or an Environmental Impact Statement should be prepared."*[83]

Research to Support an EIS

Another specific revision of concern is one that addresses the type of information that can be used to support a determination of the need for an EIS. The revision states: "*In assessing the appropriate level of NEPA review, agencies may make use of any reliable data source and are not required to undertake new scientific or technical research unless it is essential to a reasoned choice among alternatives, and the overall costs and timeframe of obtaining it are not unreasonable*."[84] The WHEJAC expresses concern that the conditions of cost and timeframe will prevent adequate consideration of potential impacts of carbon management projects and be used to avoid conducting a full EIS. This concern is especially heightened because of the uncertainties surrounding carbon management, and the lack of adequate information and research about risks to communities, which the Carbon Management Workgroup described in detail in its first set of recommendations (WHEJAC Carbon Management Report, November 2023). We recommend that the "costs and timeframe" caveat should be removed from the NEPA regulations, or at the very least such caveats should not apply to carbon management projects. In fact, due to the potential harm to communities presented by carbon management projects and the uncertainty contained in the NEPA process when determining if an EIS is required, our primary recommendation regarding NEPA related carbon management projects is that an EIS should be required for all such projects that will be planned or sited in an overburdened, disadvantaged EJ community.

---

81. Email communication, U.S. Department of Energy, May 7, 2024, https://docs.google.com/document/d/1Ow1UOxz6xB0sIYXHDkVk66xlSaVFFoGuYdh7C1bcSR8/edit.
82. 40 CFR 1508.1(o)
83. "Promising Practices for EJ Methodologies in NEPA Reviews," Federal Interagency Working Group on Environmental Justice and NEPA Committee, March 2016, www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.
84. 40 CFR 1501.3(c).

Recommendation 2

An EIS should be required for all carbon management projects that will be sited in overburdened, disadvantaged EJ communities due to the significant harm they can inflict on communities. Carbon management projects sited in EJ communities can produce extraordinary circumstances and therefore require an EIS.

Recommendation 3

If an EIS is not required for all carbon management projects sited in overburdened EJ communities, then at minimum:

1) Categorical exclusions should not be used for any carbon management projects sited in overburdened disadvantaged EJ communities and any existing regulations to the contrary should be changed; and

2) In assessing the level of NEPA review for projects that will be sited in EJ communities, agencies should be required to undertake new scientific or technical research and not be restricted by overall costs and timeframe in order to make a reasoned choice among alternatives and determine significance, which would require an EIS.

3) Regardless of the NEPA review level, an EJ analysis should be performed to address whether the proposed project will impact overburdened EJ communities. This is in addition to the required cumulative impacts analysis that must be conducted.

Pipeline Risks

One particular type of potential harm connected to many carbon management projects are pipeline leaks and ruptures that threaten public health.[85] The federal government has failed to address this issue effectively and needs to initiate and complete rulemaking on this problem as quickly as possible.

Recommendation 4

The Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) should implement rulemaking to ensure appropriate standards for pipeline companies that prevent pipeline failures and improve emergency preparedness. This must be completed as expeditiously as possible, with full transparency and meaningful engagement of environmental justice communities. PHMSA must fully comply with NEPA requirements for proposed federal actions addressing carbon management, including completion of environmental impact statements.

Public Engagement

The Carbon Management Workgroup affirms the NEPA Phase 2 Revisions to public engagement, agreeing with CEQ that public engagement is a foundational element of the NEPA process.[86] Further, beyond promoting early engagement, agencies should facilitate *meaningful* community engagement as the first step, within the pre-application processes and well before key decisions and investments are made. Public engagement must be conducted early and often, empowering communities throughout the life cycle of a project. From planning and construction to mitigation and monitoring phases, there should be multiple opportunities for community engagement as concerns, needs, and community interests change over time. Facilitation of this level of robust and ongoing engagement should be led by the Chief Public Engagement

85. See the case study below in section IX of this document of the pipeline leak in Satartia, Mississippi.
86. "National Environmental Policy Act Implementing Regulations Revisions Phase 2," Federal Register, 2024, www.federalregister.gov/d/2024-08792.

Officer. We support CEQ's requirement that agencies invite comments on draft environmental assessments (EA) and consider them in the final EA.[87]

Recommendation 5

Public comment periods should be at least 90 days to provide adequate time for community members to review, request technical assistance and develop comments. We recommend the scoping process be required as part of an EA, including notifying the public of mandatory NEPA-related hearings and public meetings. All environmental documents must be made accessible for the public's review at least 60 days before subject to a public hearing or meeting.

We affirm that "public engagement should not be a simple check-the-box exercise" and that engaging environmental justice communities is essential.[88] To facilitate meaningful engagement, agencies must be intentional and tailored in their engagement strategies. EJ communities are not monolithic; each have their own set of needs that must be accounted for. We agree with CEQ that the agency must take into consideration the primary language and accessibility to electronic media of the affected communities when selecting methods for public notification.[89]

Recommendation 6

Revised public engagement requirements should be tracked and enforced by a newly established Chief Public Engagement Officer. The Chief Public Engagement Officer should analyze the effectiveness of employed community engagement strategies and adopt protocols to rectify and adapt those that do not work well. This officer could also work with communities to determine best formats for dissemination and consider key accessibility requirements[90] including:

- Distributing technical/training materials in advance of any public hearing or meeting in the relevant languages.
- Making materials clear, void of jargon and abbreviations, and understandable to the average person. They should outline all possibilities of how the proposed project may impact the community.
- Providing resources in easily accessible formats, like infographics, videos, short summaries via both social media and traditional forms of media like flyers, newspaper, radio, TV broadcasts, and text messages.
- Leveraging trusted community-based organizations to assist in dissemination.

87. Council on Environmental Quality, "NEPA Phase 2 Final Rule Special Environmental Assessment," Regulations.gov, 2023, www.regulations.gov/document/CEQ-2023-0003-82040.
88. Council on Environmental Quality, "National Environmental Policy Act Implementing Regulations Revisions Phase 2." Federal Register, 2024, www.federalregister.gov/d/2024-08792.
89. Council on Environmental Quality, "Title 40 Code of Federal Regulations Chapter V—Council on Environmental Quality Subchapter A—National Environmental Policy Act Implementing Regulations," U.S. Department of Energy, July 18, 2024. https://ceq.doe.gov/docs/laws-regulations/CEQ%20Regulations-Redline-for-Final-Rule.pdf.
90. WeACT for Environmental Justice," Community Engagement Brief," WeACT for Environmental Justice, September 23, 2022, www.weact.org/es/justice40rward/community-engagement-brief-092322-final-2.

- Offering wraparound services to lower barriers to participation at public meetings and hearings (for example, offer transportation options and reimbursement for childcare costs) in addition to arranging for translation services.

- Providing a variety of meeting and engagement formats, including virtual and in-person sessions.

Meaningful engagement means communities must be empowered throughout the NEPA process. As outlined in the following case study, Technical Assistance Grants should be made available to frontline organizations to hire experts to evaluate and monitor proposed carbon management projects sited in their communities. Moreover, transparency is essential to fostering good faith in the process. We affirm the importance of agencies listening to and incorporating feedback from environmental justice communities.[91] Ultimately, agencies should explain how community comments were incorporated into the final decision on the proposed action.

In its new NEPA rules, CEQ encourages agencies to mitigate disproportionate and adverse human health and environmental effects on overburdened EJ communities. NEPA itself declares that "the continuing policy of the Federal Government is to assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings" and recognizes that "each person should enjoy a healthful environment."[92] NEPA and CEQ rely in part on mitigation and monitoring to achieve these statutory purposes. Mitigation includes:

- Avoiding an impact by not taking a certain action or parts of an action.
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation.
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action; and
- Compensating for an impact by replacing or providing substitute resources or environments.

Recommendation 7

Federal agencies involved in NEPA oversight for carbon management projects should be required to set up Community Advisory Groups modeled on the Superfund program and provide Technical Assistance Grants[93] that allow communities to hire independent experts to advise them on the NEPA process including a review of mitigation proposals, and cumulative impacts.

Programmatic Reviews

Programmatic NEPA reviews address the general environmental issues relating to broad decisions, such as those establishing policies, plans, programs, or suite of projects, and can effectively frame the scope of subsequent site- and project-specific federal actions. Further, they can provide high-level information on potential impacts and mitigation. These environmental reviews are not intended to make any decisions

91. Regulations.gov, "NEPA Phase 2 Final Rule Special Environmental Assessment," Regulations.gov, April 30, 2024, www.regulations.gov/document/CEQ-2023-0003-82040.
92. 42 U.S.C. §§ 4321–4370.
93. U.S. Environmental Protection Agency, "Superfund Technical Assistance for Communities," U.S. Environmental Protection Agency, October 2023, www.epa.gov/superfund/superfund-technical-assistance-communities.

regarding whether a specific project should be built but will provide early information to be considered during planning and other review processes.

Recommendation 8

DOE should suspend approvals for carbon management projects that would be sited in overburdened EJ communities until a Programmatic Environmental Impact Statement has been prepared and the NEPA review process completed.

VIII. Agency Transparency, Accountability, Public Engagement, And Community Benefit Agreements/Community Benefits Plans

The November 2023 Carbon Management Workgroup report clearly laid out a set of recommendations about the nature of meaningful involvement and public engagement that should be applied to all carbon management projects, particularly those in and around disadvantaged communities and EJ communities. (WHEJAC Report, 2023, See recommendations 4 & 5). Since that report, EJ communities throughout the United States have expressed deep concern about the processes that have accompanied the announcement of the regional hydrogen hubs and direct air capture hubs. Many of these processes are detailed in the following Section IX on "Case Studies" in which local communities describe instances of poor public participation processes. Some of these concerns stem from a lack of transparency about the scope, substance and extent of project proposals that have been awarded. It also extends to the lack of attention to basic good practices for conducting public engagement processes such as: (1) lack of appropriate notification or access to meetings hosted by applicants; (2) lack of language access and digital access or physical meeting accessibility; (3) lack of transparency about meeting records, questions, or follow up; (4) plain language and graphics-based communications tools to share technical project information in a more accessible manner; and (5) lack of clarity about the role that participation will have in shaping or informing project proposals. Currently, the DOE's carbon management projects, including regional hydrogen hubs and DAC hubs programs are not subject to uniform public participation and engagement practices such as those required under the EPA's NEPA processes. Public participation practices cannot be left to project proponents to carry out with varying degrees of adherence to best practices. Some of these best practices are covered in *Section VII Recommendation 5* of this report. These practices should reflect the recommendations from the Office of Information and Regulatory Affairs[94] report on "Broadening Public Engagement in the Federal Regulatory Process."[95]

Recommendation 1

All federally funded carbon management projects, including, but not limited to the regional hydrogen hubs and the regional DACs, should adopt robust public participation requirements in all phases of their project development. In particular, public participation requirements should be similar to those already codified by environmental statutes like NEPA.

Recommendation 2

The DOE should also require that awarded projects include on their project websites and in their Community Benefit Plans the following information**:** a description of where and how meetings were advertised or shared (i.e., newsletters, mailing lists, local papers of record, etc.); records of meeting proceedings (i.e., minutes, recordings, etc.); meeting agendas; participant lists, including the names and contact information for presenters or speakers representing the project or agencies; detailed project descriptions; response to questions posed during meetings; translated materials in languages other than English that are appropriate for the intended impacted communities; project materials including any technical documents; and community benefits plan details. In addition to these details, public meetings

94. Executive Office of the President Office of Management and Budget, "Broadening Public Engagement in the Federal Regulatory Process," Executive Office of the President Office of Management and Budget, 2024. https://www.whitehouse.gov/omb/information-regulatory-affairs/broadening-public-engagement-in-the-federal-regulatory-process.

95. Executive Office of the President Office of Management and Budget," Memorandum for the Heads of Executive Departments and Agencies," July 19, 2023, www.whitehouse.gov/wp-content/uploads/2023/07/Broadening-Public-Participation-and-Community-Engagement-in-the-Regulatory-Process.pdf.

should include the opportunity for the public to add priority issues to the agenda and have the opportunity to include community representatives on the agenda as speakers.

Recommendation 3

The DOE should require and support the formation of independent Community Advisory Groups that have representative stakeholders from disadvantaged communities in project areas for all carbon management programs. These CAGs can be modeled after the EPA's CAG process whereby CAG groups can access independent technical assistance grants and Technical Assistance Services for Communities Program to provide community groups independent, third-party guidance and advice throughout the project process, helping the public better understand the technical aspects and feasibility of projects and support the informed input of community members.

Community Benefit Plans (CBP) & Community Benefit Agreements (CBA)

DOE's website on Community Benefits Plans specifies, "Community Benefits Plans are based on a set of four core policy priorities:

1. Engaging communities and labor.
2. Investing in America's workers through quality jobs.
3. Advancing diversity, equity, inclusion, and accessibility through recruitment and training; and
4. Implementing Justice40, which directs 40 percent of the overall benefits of certain Federal investments to flow to disadvantaged communities."

There are also only a handful of examples of CBAs currently publicly available for review including the following: Battelle Memorial Institute, Michigan,[96] Southern States Energy Board, Georgia,[97] University of Utah,[98] Project Cypress, Louisiana.[99] These CBPs are not easy to locate on the DOE's website and they vary widely in terms of what information is provided in each plan. What's clear from a review of these existing CBPs is that there is a lack of diverse representation of community-based EJ organizations among the organizations listed for engagement. There is also a general lack of attention to how environmental risks or environmental justice concerns will be addressed as part of these plans. There is no mention of how engagement will actually meet the standards of meaningful engagement that our November 2023 report lays out.

DOE also distinguishes between CBAs and CBPs stating: "*Community Benefit Agreement is one possible outcome of meaningful community engagement that is part of the Community Benefits Plan. While the names are similar, the two are not synonymous. For more resources relating to Community Benefits Agreements, please reference DOE's Community Benefits Agreements Toolkit web page*."[100] On the CBA

96. National Energy Technology Laboratory, "Carbon Storage Complex Feasibility for Commercial Development In Southeastern Michigan," U.S. Department of Energy, 2024, https://netl.doe.gov/project-information?p=FE0032312. https://netl.doe.gov/projects/files/Carbon%20Storage%20Complex%20Feasibility%20for%20Commercial%20Development%20in%20Southeastern%20Michigan.pdf.
97. National Energy Technology Laboratory, "Project Lochridge," U.S. Department of Energy, August 2023, www.netl.doe.gov/project-information?p=FE0032270.
98. National Energy Technology Laboratory, "Uinta Basin Carbonsafe II: Storage Complex Feasibility," U.S. Department of Energy, 2024, www.netl.doe.gov/project-information?p=FE0032266.
99. This is not an exhaustive list of CBPs available to date.
100. "About Community Benefits Plans," U.S. Department of Energy, 2024, www.energy.gov/infrastructure/about-community-benefits-plans.

toolkit page, the DOE highlights that the intended purpose of CBA is for its strategic value for private developers of projects:

> *CBAs are strategic vehicles for community improvement, while benefiting private sector developers and both state and local governments. They are not zero-sum instruments. They are legal agreements between community benefit groups and developers, stipulating the benefits a developer agrees to fund or furnish,* ***in exchange for community support of a project.***[101]

To date, DOE has not provided any examples of CBAs associated with carbon management projects under their purview. If such CBAs exist, it is unclear how public funds are used to leverage support for projects and what such support entails. This is particularly troublesome in light of the history of disenfranchisement and cooption of disadvantaged communities in negotiations involving industries that stand to profit from federal funds while potentially putting at risk the lives and livelihoods of local communities. This can serve as a subtle form of coercion and can also assume that particular groups represent the sentiment and consensus of diverse stakeholders that may not agree with or benefit from the terms of said CBAs in the same way. DOE has also recently launched a Regional Energy Democracy Initiative to be piloted in the U.S. Gulf South that makes use of the CBPs but does not specify how these plans will address the environmental justice concerns that have been raised by Gulf South communities throughout the region.[102]

Recommendation 4

DOE should publicly share all CBPs and disclose which carbon management projects have CBPs in negotiation and the parties to these negotiations. In the April 29th memo from DOE, it states "*Summaries of the selected CBPs can be found on the OCED website with project summaries. Community benefits commitments will be made publicly available after OCED awards are made*." If CBPs are being actively negotiated with parties that stand to materially benefit from said agreements, these negotiations should be publicly disclosed and the groups that are engaged in these negotiations should be publicly disclosed prior to the OCED awards being finalized so that the public has a full understanding of the groups involved in the negotiations and how public tax dollars are being leveraged for the support of projects.

Recommendation 5

DOE should suspend the use of CBAs and Community Benefits Plans until the project's full scope of impacts and risks are fully disclosed to the public and shared with impacted community stakeholders. Any CBAs that are applicable to disadvantaged and environmental justice communities should be shared with the WHEJAC for review and feedback prior to finalization.

CBPs and CBAs that are associated with projects with wide ranging impacts should be subject to public discussion and democratic deliberation among the full spectrum of stakeholders that may be impacted by the proposed project. DOE should also ensure that before engaging in discussions around CBPs, and to facilitate communities' full ability to participate in such discussions, that there is a step in the process where all pertinent information about the project is disclosed to communities. Disclosure should also be ongoing as new information comes to light. Without full disclosure of the full range of potential current

---

101. "Office of Energy Justice and Equity," U.S. Department of Energy, 2024, www.energy.gov/justice/community-benefit-agreement-cba-toolkit.

102. Dr. Beverly Wright," The Path Forward with EPA and Carbon Capture and Storage (CCS)," Deep South Center for Environmental Justice, December 29, 2023, https://dscej.org/2023/12/29/the-path-forward-with-epa-and-carbon-capture-and-storage-ccs.

and future impacts, risks and uncertainties, any endorsement or agreement would be premature at best, or coercive or unethical in the worst-case scenario.

Recommendation 6

If CBPs continue to be a part of carbon management projects, these CBPs must require criteria in addition to the four components currently required in CBPs. These additional criteria should detail the (1) environmental impacts and risks to local communities and workers; (2) environmental justice considerations, including contributions to existing cumulative impacts and burdens; and (3) any public health impacts and protections for local communities and workers and their families. These additions to CBPs must fully disclose environmental and public health risks, technical, financial and exposure uncertainties and cumulative impacts related to the existing burdens experienced in the project areas, including the use of EPA EJScreen and the CDC EJ Index tools.

Recommendation 7

Project leads and DOE must identify in the CBP a process for identifying whether community stakeholders and, specifically, impacted EJ organizations and residents have registered opposition to the project or raised concerns about the project. Furthermore, the 4th category of the CBP pertaining to the implementation of Justice40 should detail whether the project is a benefit or a harm based on a thorough analysis of "benefits" or "harm" using indicators from the EJ Scorecard. In particular, the basis for determining benefits and harms should include consideration of the potential to cause adverse impacts such as contributing to localized air pollution, traffic, and other indicators covered by Climate and Economic Justice Screening Tool's Categories of Burden. Economic factors cannot be the sole factors in determining benefits, especially if there are environmental and public health risks present.

IX. Case Studies of Carbon Management Projects in EJ Communities

Several carbon management projects funded by DOE have begun public engagement processes and provide important insights about the on-the-ground experience of EJ communities. These specific case studies have been the subject of intense community inquiries that have raised serious concerns pertaining to the disclosure of risks, transparency and public engagement processes of awarded projects. Some of these concerns were raised during the public comment period for the WHEJAC June 5-6, 2024. These case studies serve as an important opportunity to highlight concerns, questions and near-term recommendations that are emerging in real-time from environmental justice, and disadvantaged communities. The case studies draw on firsthand experiences, observations and public records of emerging and ongoing carbon management projects in various communities, specifically: Louisiana, Texas, California, and the Mid-Atlantic.

Case Study 1. Carbon Capture and Sequestration Projects, Louisiana

The dangers of pipeline transport of carbon dioxide (CO_2) and underground waste disposal of the compound are fueling opposition to carbon capture and storage (CCS) in Louisiana. An increasing number of communities, environmental justice and climate justice groups, as well as lawmakers in Louisiana are calling for a halt to the planned deployment of CCS.[103] Diverse organizations and individuals formed the coalition Louisiana Against False Solutions to raise awareness[104] of the severe risks posed by CCS and unite around a just and sustainable future for Louisiana communities, families, and workers.

Louisiana is in the crosshairs for the most applications in the nation submitted by industrial companies seeking permits for CO_2 waste injection projects. These CCS projects are not proposed for existing industrial operations, but, instead, are part of plans for a significant expansion of new gas and petrochemical facilities in the region.

The CO_2 pipeline disaster[105] in Satartia, Mississippi on February 22, 2020, was a wake-up call for people in Louisiana, where the pipeline crosses. The poisonous gas clouds of CO_2 escaping from the pipeline triggered the mass emergency evacuation of 200 residents and the hospitalization of at least 45 people. The displacement of oxygen from the CO_2 caused people to pass out and cars to stop running in the middle of a road. Days of heavy rain caused land under the pipeline to fall away, leading to an uneven

103. Timothy Puko, "Why these environmentalists' are part of Bidens climate push," The Washington Post, June 25, 2023, www.washingtonpost.com/nation/2023/06/22/biden-carbon-capture-climate-environmentalists.
104. Louisiana Against False Solutions, *Wetlands not Wastelands*, video produced by Louisiana Against False Solutions and Frontline Media Network, (2024), https://vimeo.com/919356909.
105. Julia Simon, "The U.S. is expanding CO_2 pipelines. One poisoned town wants you to know its story," National Public Radio, Sep. 25, 2023, www.npr.org/2023/05/21/1172679786/carbon-capture-carbon-dioxide-pipeline.

ground surface and rupture. More recently, this same pipeline, now owned by ExxonMobil, leaked over 100,000 gallons of CO_2[106] near the town of Sulphur, Louisiana on April 3, 2024. With an inadequate alert system, local emergency officials notified residents via Facebook and phone calls to registered numbers of "a bust" in the pipeline triggering a shelter-in-place order to stay indoors and shut off air conditioners. The fire chief acknowledged the risks of sheltering in place[107] when the safety response is to evacuate from CO_2, but the official noted that the changing wind direction would have likely increased the risk of CO2 exposure for residents trying to escape. The local conditions exacerbating CO_2 pipeline emergencies in Louisiana and Mississippi are ignored by proponents of CCS and have not been addressed by governmental regulators.

The Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) is the federal regulator responsible for addressing pipeline failures. PHMSA officials have yet to issue regulations to prevent a CO_2 pipeline leak or rupture since announcing[108] it would do so two years ago, following the disaster in Satartia. This leaves Louisiana and other communities without protection from a hazard occurring at a CO_2 pipeline.

In addition to pipeline leaks and ruptures, the permanent waste disposal of millions of tons of CO_2 underground involves serious risks for Louisiana communities. Louisiana is on geologic faults. High-pressured injection of CO_2 below ground can trigger earthquakes with damaging effects. Farmers and communities rely on groundwater in Louisiana. CO_2 can contaminate underground sources of drinking water by releasing arsenic and other toxic heavy metals trapped in rocks. Louisiana is riddled with thousands of unplugged wells, some of which remain unmapped and undocumented. These old oil and gas wells reaching deep underground can function like a straw, drawing CO_2 above ground where it can enter the atmosphere and worsen the climate crisis. Given the EPA's waiver[109] of hazardous waste restrictions on CO_2 as requested by a federal task force on CCS, there is no assurance[110] that these risks would be adequately evaluated, avoided, or mitigated.

The regulation of oil and gas wells has been poorly managed by the Louisiana Department of Natural Resources [recently renamed the Department of Energy and Natural Resources (DENR)]. Governmental audits[111] show a track record of departmental failures. There has been significant public attention to the

106. Tristan Baurick, "'A stark warning': Latest carbon dioxide leak raises concerns about safety, regulation," La Verite News, April 30, 2024, https://veritenews.org/2024/04/30/a-stark-warning-latest-carbon-dioxide-leak-raises-concerns-about-safety-regulation.

107. Emily Sanders, "Big Oil's fight to limit CO_2 pipeline safety," ExxonKnews.com, April 24, 2024, www.exxonknews.org/p/big-oils-fight-to-limit-co2-pipeline.

108. US Department of Transportation Pipeline and Hazardous Materials Safety Administration, "PHMSA announces new safety measures to protect Americans from carbon dioxide pipeline failures after Satartia, MS leak," U.S. Department of Transportation, March 26, 2022, www.phmsa.dot.gov/news/phmsa-announces-new-safety-measures-protect-americans-carbon-dioxide-pipeline-failures.

109. Environmental Policy Agency, "Hazardous Waste Management System: Conditional Exclusion for Carbon Dioxide (CO_2) Streams in Geologic Sequestration Activities," Environmental Policy Agency, 79 Fed. Reg. 350 (March 4, 2014), www.federalregister.gov/documents/2014/01/03/2013-31246/hazardous-waste-management-system-conditional-exclusion-for-carbon-dioxide-co2-streams-in-geologic.

110. Wesley Dyer, "Waste Management v. Climate Mitigation: How CO_2 Sparked a Clash of Environmental Values," *Pace Environmental Law Review*, vol. 33 (2015): 4, https://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=1786&context=pelr.

111. Louisiana Legislative Auditor, "Performance Audit: Regulation of Oil and Gas Wells and Management of Orphaned Wells by the Office of Conservation," Department of Natural Resources, May 28, 2014, https://app.lla.la.gov/PublicReports.nsf/D6A0EBE279B83B9F86257CE700506EAD/$FILE/000010BC.pdf.

department's actions that resulted in a tragic community disaster,[112] an emergency warning[113] of possible failure of a salt dome, and severe health damage[114] from exposure to permitted oilfield waste.

On December 28, 2023, DENR was delegated new authority by the EPA to permit carbon dioxide waste injection wells. Remarkably, in a state dominated by oil, gas and petrochemical industries, there was not one comment on the state administrative record in favor of the department's application to the EPA. The transcript of the written comments and public hearing present varying arguments, all in opposition to the application for primacy.[115] Each comment indicates a lack of confidence that the Louisiana department can safely and effectively manage the technical complexity and dangers of CO_2 waste injection, given the department's troubling record of failure.

A multi-stakeholder task force, dominated by oil and gas industry representatives and state regulatory officials, produced the Climate Action Plan[116] for then Governor John Bel Edwards in February 2022. Notwithstanding this makeup of the task force, the plan acknowledges CCS and CCUS are technologies that can negatively impact communities, ecosystems, and cultural resources in Louisiana. The plan goes on to recommend further assessment to fully understand the impacts of CCS and CCUS. The task force urges a new regulatory and legal framework to address CCS and CCUS.

In Louisiana, the majority of state legislators are acquiescent to CCS proposals. In 2022, lawmakers enacted a change to a law[117] that no longer requires state employees performing geologic scientific work to be licensed. Expertise in geologic science is critical to promulgating and implementing regulations, evaluating the operation and impact of a proposed well, and monitoring impacts with knowledge of geologic conditions. The law leaves Louisiana communities without knowledgeable experts employed by the state. In the current legislative session, some Louisiana lawmakers introduced several bills to restrict CCS operations, establish buffers to distance carbon dioxide wells from community assets, and establish authority for local decision-making on proposed CCS projects. These bills were opposed by an overwhelming majority of lawmakers in favor of CCS.[118]

It is important to note that for policymaking closer to home, municipal and parish governments have acted to prohibit the deployment of CCS. The City Council in New Orleans[119] prohibited the build-out of CCS

112. Melissa Gray, "Louisiana probes cause of massive sinkhole disaster," CNN, August 10, 2012, www.cnn.com/2012/08/09/us/louisiana-bayou-sinkhole/index.html.
113. Patrick Courreges, "Governor Edwards and Office of Conservation declare emergency for Calcasieu Parish salt cavern operation," Louisiana Department of Natural Resources, September 20, 2023, www.dnr.louisiana.gov/index.cfm/newsroom/detail/1229.
114. Monica Hernandez, "Grand Bois neighbors say oil waste site in backyard causing cancer," WWL-TV News, February 27, 2013, www.dnr.louisiana.gov/index.cfm/newsroom/detail/1229.
115. Letter from State of Louisiana Office of Conservation to U.S. Environmental Protection Agency Regional Administrator David Gray, Region 6: "Summary Report of Public Comment, Class VI USEPA Primacy Application Docket No. IMD 2021-02" September 17, 2021, www.dnr.louisiana.gov/assets/OC/im_div/uic_sec/SummaryofClassVIPublicCommentsandResponses.pdf.
116. Climate Initiatives Task Force, "Louisiana Climate Action Plan: Climate Initiative Task Force Recommendations to the Governor," State of Louisiana, February 2022, https://gov.louisiana.gov/assets/docs/CCI-Task-force/CAP/Climate_Action_Plan_FINAL_3.pdf.
117. Louisiana Legislature, "House Bill 169," 2022, https://legis.la.gov/Legis/ViewDocument.aspx?d=1280884.
118. Wesley Muller, "Weakened carbon capture regulations advance from Louisiana House," The Louisiana Illuminator, April 17, 2024, https://lailluminator.com/2024/04/17/weakened-carbon-storage-regulations-advance-from-louisiana-house.
119. Deep South Center for Environmental Justice, "City Council of New Orleans commended for prohibiting carbon capture and storage," Deep South Center for Environmental Justice, June 9, 2022, https://dscej.org/2022/06/09/deep-south-center-for-environmental-justice-commends-new-orleans-city-council-for-prohibiting-carbon-capture-and-storage.

operations—the first in the nation to do so. Members of the council in Livingston Parish[120] set a moratorium on CCS projects, which they continue to extend. Central to both of these local restrictions is protecting the health and safety of residents and the environment.

Near-Term Recommendations

1. Ensure environmental justice communities are not burdened by CCS projects.
2. Conduct an environmental justice analysis of Louisiana that includes a statewide assessment of geologic conditions, groundwater sources of drinking water, unplugged wells, wetlands and wetland restoration projects.
3. Give the public access to information indicating the sites of proposed CCS projects.
4. Subject CCS to the requirements of the Resource Conservation and Recovery Act and implementing regulations on the storage, transport, and handling of CO_2, a hazardous waste.
5. Expedite PHMSA's federal safety regulations to prevent or reduce the risks of transporting CO_2 via pipeline.
6. Require CO_2 pipeline safety regulations to address local conditions that exacerbate the danger of pipeline failure, such as extreme weather events, inadequate emergency response systems, and inaccessible evacuation routes.
7. For each state that applies for primacy to administer the Class VI Underground Injection Control program for carbon waste injection, document and evaluate the entire record of performance by the state applicant, including its history of permitting, monitoring, enforcement, and overall compliance with the Safe Drinking Water Act and UIC regulations.

Case Study 2. Class VI injection at the Escalante Generating Station, New Mexico

The state of New Mexico, in collaboration with Colorado, Utah, and Wyoming, submitted a $1.25 billion grant proposal for hydrogen funding via the Western Inter-State Hydrogen Hub (WISHH) in April 2023.[121] The proposal identified eight projects across the four states, with at least one project in each state.[122] The WISHH partner institutions included universities, national laboratories, and private-sector developers and technology providers.[123] There were multiple projects and partners associated with the WISHH proposal including Avangrid, Libertad Power, and Tallgrass Energy projects that proposed production of hydrogen on Navajo Nation territory and other locations, along with several other projects. The WISHH contracted

120. Jacqueline DeRobertis, "Livingston Parish extends development moratorium for a year as council aims to rein in growth," The Advocate, January 25, 2024, www.theadvocate.com/baton_rouge/news/livingston-parish-extends-development-moratorium-for-a-year-as-council-aims-to-rein-in-growth/article_2794f9ae-bbcc-11ee-93ed-2b04ecb767f3.html.

121. Curtis Segarra, "New Mexico puts in bid for $1.25 billion hydrogen grant," KRQE News, April 17, 2023, www.krqe.com/news/new-mexico/new-mexico-puts-in-bid-for-1-25-billion-hydrogen-grant.

122. Governor Michelle Lujan Grisham, "Western Interstate Hydrogen Hub Submits Application for U.S. Department of Energy Funding Grant," New Mexico Energy, Minerals, and Natural Resources Department, April 10, 2023, www.env.nm.gov/wp-content/uploads/2023/04/2023-04-10-COMMS-Western-Interstate-Hydrogen-Hub-Submits-Application-for-U.S.-Department-of-Energy-Funding-Grant-Final-1.pdf.

123. Governor Jared Polis, Colorado; Governor Michelle Lujan Grisham, New Mexico; Governor Spencer Cox, State of Utah; Governor Mark Gordon, State of Wyoming, "Memorandum of Understanding: Western Inter-States Hydrogen Hub," February 23, 2022, https://3fccccf92b0771dbed22-ce999ed43c4da4dd08d8e13370d58a49.ssl.cf2.rackcdn.com/4ced-182/2022-02-24-final-western-inter-states-hydrogen-hub-mou-v5022322.pdf.

with a global design and engineering firm Atkins as an overall project manager and was hired to develop and submit the proposal to DOE's Office of Clean Energy Demonstrations (OCED).[124]

Numerous climate and legacy environmental justice organizations working across the state of New Mexico have been engaged through political advocacy and popular education centered around land based and Indigenous epistemologies of protecting the sacred. These environmental justice community-based organizations have played a pivotal role in addressing community concerns with emerging technologies such as hydrogen, carbon capture sequestration, and carbon markets.[125] Many of these technologies are being developed and appear to be aimed at prolonging fossil fuel infrastructure that communities see as a diversion of investments away from real emissions reductions goals and a continuation of generations of harmful impacts on their communities. In a letter to the Department of Energy, a coalition of the environmental justice organizations urged Secretary Granholm to prioritize community concerns and reject the WISHH application as it could "...devastate public health, clean air, Indigenous sacred places, and the climate, and does not have the support of communities in New Mexico."[126] The coalition noted that a hydrogen economy in New Mexico would significantly increase co-pollutants that threaten scarce water resources, public health, and safety. The EJ organizations felt fortunate that in October 2023, the WISHH application was denied.

Near-Term Recommendations

1. **Reinstate primary enforcement authority over Class VI wells, to EPA.** Unfortunately, alarming projects continue to move forward in New Mexico promoting the use of carbon capture and sequestration. These include a project involving a Class VI injection at the Escalante Generating Station in New Mexico and other projects that were initially a part of WISHH despite EJ community concerns.[127] These projects are seeking funding through multiple federal programs like the DOE's loan program. Representatives of environmental justice communities noted in the public comment period (WHEJAC, June 5-6, 2024) how these Federal programs serve as perverse incentives to pollute water sources, soil and air. Class VI wells enable polluters to sequester carbon deep underground in an attempt to offset their emissions. Public commenters also noted that, in addition to carbon capture and storage being a false climate solution, this process poses severe risks of contamination to groundwater, soil and air. Furthermore, Class VI well injection can cause sudden and large releases of carbon dioxide at concentrations harmful to human health and can lead to earthquakes.[128] When combusted, hydrogen releases NOx emissions up to six times more than when methane is combusted.[129] Moreover, hydrogen itself is an indirect greenhouse gas that extends the life of methane in the atmosphere. All types of hydrogen use large quantities of water, which is unsustainable especially in drought-stricken states like New Mexico.

---

124. Polis, "Memorandum," 2022.
125. Western Environmental Law Center, "NM groups to lawmakers: Fossil-fueled hydrogen a climate threat, not a solution," Western Environmental Law Center, October 5, 2021, https://westernlaw.org/nm-groups-lawmakers-fossil-fueled-hydrogen-climate-threat-not-solution.
126. New Mexico No False Solutions Coalition, letter to Secretary of the Department of Energy, June 13, 2023, www.biologicaldiversity.org/programs/public_lands/pdfs/23-06-12-NFS-Hydrogen-Letter.pdf.
127. Carlos Anchondo, Jason Plautz, "CCS 2.0: Company reboots bid to save N.M. coal plant," E&E News, August 18, 2023, www.eenews.net/articles/ccs-2-0-company-reboots-bid-to-save-n-m-coal-plant/; https://www.sanjuancarbonsafe.org.
128. Congressional Research Service, "Injection and Geologic Sequestration of Carbon Dioxide: Federal Role and Issues for Congress," 2022, https://sgp.fas.org/crs/misc/R46192.pdf.
129. Abbie Ramanan, "The Top Five Fossil Fuel Industry Myths About Hydrogen," Clean Energy Group, 2023, www.cleanegroup.org/the-top-five-fossil-fuel-industry-myths-about-hydrogen.

2. In 2023, the New Mexico legislature appropriated money for the Energy, Minerals and Natural Resources Department (EMNRD) to petition to obtain primary enforcement authority over Class VI wells, which are usually regulated by the EPA. The EPA has already expressed doubts about EMNRD's ability to meet regulatory requirements under the federal Safe Drinking Water Act and safely administer a Class VI well program.[130] EMNRD's Oil Conservation Division has about a 50 percent staff vacancy and only nine inspectors for over 66,000 active oil and gas wells, yielding a ratio of 1 inspector per 7,300 wells.[131] These conditions suggest that the New Mexico agency is not equipped to safely oversee risky Class VI injection wells.

3. **Provide Federal oversight on the development of a "new water supply" derived from toxic oil and gas wastewater reuse, brackish and brine water through an undisclosed treatment process.**

4. In Spring 2024, the New Mexico legislative session fossil fuel interests moved several pieces of legislation: House Bill 9, House Bill 259, and House Bill 237.[132] These bills aimed to streamline hydrogen projects without proper oversight and permits, allocating the severance tax for private equity funds, and establishing a new environment and climate authority, putting into question decision-making powers. A coalition of environmental justice groups spoke out against these initiatives, suggesting these actions would undermine environmental justice community concerns in order to secure federal funds for hydrogen and carbon capture technologies. EJ organizations also note the misalignment with the Justice40 goals.[133]

5. The New Mexico Environment Department proposed a Strategic Water Supply plan which poses a risk for New Mexico's scarce water resources as it aims to allocate $500 million in public funds to private companies. The community is highly concerned that this plan also encourages new polluted sources of water that will be used to establish a hydrogen economy and will have additional uses in agriculture.[134]

Case Study 3, California Hydrogen Hub, Alliance for Renewable Clean Hydrogen Energy Systems (Arches 2) Hydrogen Hub Project

The State of California launched the Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) as a non-profit public private partnership.[135] ARCHES has multiple public partners including the Governor's Office of Business and Economic Development (GO-Biz), other state agencies, the state legislature, local governments, and higher education institutions including the University of California, and two of its

130. New Mexico Legislative Finance Committee, 2023, Fiscal Impact Report, House Bill 174. www.nmlegis.gov/Sessions/23%20Regular/firs/HB0174.PDF.
131. Atencio v. State of New Mexico (2023).
132. New Mexico Legislature, House, Climate, Energy & Water Division, *House Bill 9*, 56th Legislature, 2d session, www.nmlegis.gov/Legislation/Legislation?Chamber=H&LegType=B&LegNo=9&year=24; New Mexico Legislature, House, State Investment In Climate Technology, *House Bill 259*, 56th Legislature, 2d session, ; House Bill 237, Climate, Energy and Water Authority Act, www.nmlegis.gov/Legislation/Legislation?Chamber=H&LegType=B&LegNo=237&year=24, www.nmlegis.gov/Legislation/Legislation?Chamber=H&LegType=B&LegNo=259&year=24; New Mexico Legislature, House, Climate, Energy & Water Authority Act, *House Bill 237,* www.nmlegis.gov/Legislation/Legislation?Chamber=H&LegType=B&LegNo=237&year=24.
133. Gail Evans, "Bowing to Oil Industry, New Mexico Legislature Fails to Act on Climate, Pollution Crises," Center for Biological Diversity, February 15, 2024, https://biologicaldiversity.org/w/news/press-releases/bowing-to-oil-industry-new-mexico-legislature-fails-to-act-on-climate-pollution-crises-2024-02-15.
134. Danielle Prokop, "Strategic Water Supply taps out as the governor insists she won't 'give up on it'," *Source New Mexico,* February 16, 2024, https://sourcenm.com/2024/02/16/governor-insists-she-wont-give-up-on-strategic-water-supply.
135. ARCHES, "ARCHES."

affiliated national laboratories with Renewables 100. ARCHES private sector partners include the State Building Trades Council of California, along with support from hundreds of other private sector partners.[136]

Near-Term Recommendations

1. Require ARCHES to eliminate NDA requirements that are currently part of the CBP and CBA for the project. DOE should work with the ARCHES project leads to eliminate their NDA requirement and allow for a more inclusive public process.

2. Require ARCHES to amend their governance structure to maximize opportunities for impacted community representation. For example, the project has yet to conduct meetings with residents in port adjacent communities of Long Beach, Los Angeles, and Oakland.

3. Improve the ARCHES' draft Community Benefits Plan as it relates to transparency, information sharing, and community engagement. In the draft community benefits plan, it states that, "*During the formation of ARCHES, we invited local community and EJ leaders to participate in a series of hybrid multi-stakeholder workshops and began hosting weekly (now biweekly) group and one-on-one meetings*."[137] However, these meetings were deeply unsatisfactory for frontline EJ groups who were unable to glean any meaningful information about the types of projects that would be included and where they would be built. In a letter sent to the DOE Office of Clean Energy Demonstrations on October 13th, seven environmental justice organizations wrote that the ARCHES project

   > *…disregarded environmental justice concerns and the need for inclusive public process. This has resulted in an application that has received no vetting from community-based environmental justice organizations, nor the community members they represent. In general, community engagement efforts undertaken by ARCHES leadership thus far have failed to achieve any form of meaningful consultation and feedback with and from impacted communities*.[138]

4. Enforce community engagement best practices as a requirement of fulfilling the Community Benefits Plan selection criteria. EJ organizations in California involved in this process describe ongoing efforts to disenfranchise their participation and dissenting voices from being part of the public record of public engagement that is ongoing, stating: *"In conclusion, while our groups have participated in every public venue offered by ARCHES leadership short of signing the NDA, material details of the project still remain opaque and unavailable to us. ARCHES has willfully erected insurmountable barriers to public engagement for a large portion of California's community-based organizations…"*[139]

5. Provide greater transparency on project locations and communities directly impacted. ARCHES has not identified any specific site locations for their projects. In the Draft Community Benefits Plan, they write that there are projects "across major transportation corridors in California," without specific documentation of where these projects are precisely located.

6. Provide specificity on projected environmental health impacts and efforts to address legacy pollution within the designated "Disadvantaged Communities." ARCHES cites a report from the

136. ARCHES, "ARCHES."
137. ARCHES, "ARCHES Community Benefits Plan," p. 6, https://archesh2.org/community-benefits-2.
138. David Crane, "A Letter from CEJA to the Department of Energy RE: Hydrogen Funding for ARCHES, letter, California Environmental Justice Alliance, October 13, 2023.
139. Crane, "A Letter," 2023.

American Lung Association, showing that 23 of 25 of the most polluted counties in the nation are in California. However, ARCHES has not put forward clear information on the projected environmental health impacts of the buildout of hydrogen on these frontline communities. There are a considerable number of production pathways that can impact communities and exacerbate existing legacies of pollution.

Case Study 4. Mach2 Hydrogen Hub (Mid-Atlantic Region, i.e., E. Pennsylvania, Delaware, Southern New Jersey)

The MACH2 Hydrogen Hub has been proposed to cover the Mid-Atlantic Region; i.e., Eastern Pennsylvania, Delaware, and Southern New Jersey. The hub has proposed a five-step approach encapsulating the application and four phases. MACH2 organizers and the OCED team have claimed that each phase will have a go–no go opportunity but have not specified the structure of these decisions nor have they affirmed that a host community will have the right to refuse a project's development in their communities, or even who exactly the host communities will be. In theory, the MACH2 project will not include the extraction of hydrogen[140] (referred to as white hydrogen) but instead utilize green (hydrogen theoretically produced via electrolysis powered solely by renewable energy) and pink hydrogen (hydrogen produced via electrolysis powered by nuclear energy). However, it is worth noting, that the precise nature and types of hydrogen included in the project continue to change, with some types of hydrogen originally proposed, dropping completely out of the project. Several community organizations have raised concerns regarding both the logistical development of this project as well as the infrastructure and production of hydrogen, as well as the associated risks in production, transportation, storage, delivery, and end use.[141] During the April 10 MACH2 Listening Session, facilitators claimed that they would be addressing questions and comments, but not provide responses in real time. Organizers, including those at the New Jersey Environmental Justice Alliance, have not yet received responses to the concerns and questions that they raised during the meeting.[142]

Near-term Recommendations

1. Residents in the EJ disadvantaged community in Chester, PA, have requested that a meeting be held in a more accessible location in or near Chester so that local, impacted residents can have a fair opportunity to engage in the process.[143]
2. All future public meetings, including any future meeting in Chester, PA, or virtually online, should include ample time for residents to share their questions and concerns (not be limited to only three minutes for a 1.5-hour block of time) and have an open discussion with the project proponents and relevant agencies so that participants can receive responses to questions posed during the meeting.
3. If there are ongoing negotiations around a CBP or CBA, these should be disclosed publicly so that locally impacted EJ communities have the opportunity to know who a party to "benefits" claimed

140. Public comment during April 2024 virtual listening session, Mid Atlantic Clean Hydrogen Hub, www.energy.gov/oced/h2hubs-local-engagement-opportunities.
141. Delaware Riverkeeper Network, "U.S. Dept. of Energy's Hydrogen Hubs and MACH2," 2024, https://delawareriverkeeper.org/issues/climate-change-fossil-fuels-and-energy/mid-atlantic-hydrogen-hub.
142. Brooke Helmick, "Questions for the MACH2 Community Engagement Team," New Jersey Environmental Justice Alliance, May 3, 2024, https://njeja.org/questions-for-the-mach2-community-engagement-team.
143. Public comment during April 2024 virtual listening session, Mid Atlantic Clean Hydrogen Hub, www.energy.gov/oced/h2hubs-local-engagement-opportunities.

by the project and the terms and conditions of how those supposed benefits are to be defined, measured and who they will accrue to and under what conditions.

4. Halt the negotiations and finalization of any CBA or CBP until residents and organizations representing the most directly impacted communities and disadvantaged community groups have the opportunity to learn the full extent of potential risks, impacts or uncertainties related to the project.
5. Participants who submitted questions in the public engagement meetings or directly via emails should receive responses to their questions and those responses and questions should be part of a public record of the engagements to date.
6. Project proponents and DOE should disclose the exact geographic location and proposed projects that are part of the hydrogen hub. The excuse that even the location of these projects or the nature of what is being proposed is not available for public scrutiny because "They are changing in real-time" is not acceptable.

Case Study 5. Carbon Capture Large-Scale Pilot, Big Spring Refinery (Delek Holdings, Inc.), TX[144]

The Carbon Capture Pilot at Big Spring Refinery, led by Delek US Holding, was selected by the DOE as one of four Carbon Capture Large-Scale projects. This project proposes to build a carbon capture system at Delek's Big Spring Refinery, an oil refinery in Big Spring, Texas.[145] The Project aims to capture 145,00 metric tons of CO_2 per year, a capture rate of at least 90 percent of the CO_2 from the refinery's Fluid Catalytic Cracking Unit.[146] The project will be designed to transport the CO_2 by existing pipelines for permanent storage or utilization. The project proponents stated an intent to create a community advisory committee (CAC) to prioritize public feedback, concerns, and suggestions to project leadership and the community relations team.

The First listening session was held March 5, 2024: The DOE, OCED and Delek Industry**.** The meeting was facilitated by an independent facilitator Emanuel Taylor, not an official part of DOE or Delek Industries. The meeting was not recorded, with project representatives citing that it would, "Giving us a chance to share thoughts freely."[147] The facilitator stated the slides would be available on the DOE website and gave a breakdown of the four large scale projects selected for award, including the Big Spring Project. Delek Refinery representatives presented an explanation of the project, describing it in two phases and stating that the negotiations could take months. They then stated it was a four-phase approach and that the DOE will monitor phases to see if they can receive more funding. They called it the "go–no go" approach. They described the Community Benefits Plan and the NEPA process that will be part of Phase I and Phase II of the project.

Concerns raised by TEJAS and community representatives at the March 5th meeting included:

---

144. Office of Clean Energy Demonstrations U.S. Department of Energy. "Carbon Capture Pilot at Big Spring Refinery: Community Briefing," (2024) www.energy.gov/sites/default/files/2024-03/2024%20OCED%20Carbon%20Capture%20Pilot%20at%20Big%20Spring%20Briefing.pdf.
145. Delek US Holdings, "Delek US Holdings' Big Spring Refinery Selected by the Department of Energy for Carbon Capture Project," news release, February 2, 2024, www.prnewswire.com/news-releases/delek-us-holdings-big-spring-refinery-selected-by-the-department-of-energy-for-carbon-capture-project-302052242.html.
146. "Overview of Fluid Catalytic Cracking Unit (FCCU)," *Inspectioneering*, https://inspectioneering.com/tag/fccu.
147. Participant observation and meeting notes recorded by *Texas Environmental Justice Advocacy Services (TEJAS)* representative in attendance, March 5, 2024

- No prior public notice was made widely available to communities or local EJ organizations via local media, emails, or other typical forms of communication.
- No public notice was sent out in dual language or the predominant language of the community, which is largely Spanish speaking.
- The City Council representative noted that he was not made aware of/informed of meeting.
- Community participants could only ask questions through the Q&A[148] and no questions were answered on the following issues that were raised by local residents:
    - What are the Public Health Impacts of the project?
    - Where are you on NEPA Process?
    - Have you conducted a Cumulative Impacts Analysis?
    - Risk Management Program transparency (available) not sure when.
    - Who sits on the Community Advisory Committee, and what is the equity and decision-making process to determine who sits on the Community Advisory Committee.
    - Question on Seismic Activity Consideration due to project.
    - Question was asked whether the Community benefits agreement was legally binding.

Near-Term Recommendations

1. DOE must ensure that project proponents follow best practices for public engagement processes including sufficient meeting notifications, language accessibility, and the involvement of local residents, legislators and environmental justice organizations in the area of impact.

2. DOE must ensure that the process of selecting community advisors and the CBP are open to community involvement and input to shape the fair and equitable representation of disadvantaged communities.

148. TEJAS participant observation, March 5, 2024.

Conclusion: Perverse Incentives

A critical part of our role is to highlight important issues pertaining to the use of public funds to achieve the intended goals of climate mitigation. As such, we want to ensure good governance and accountability for federal investments. We believe there are a number of perverse incentives that currently exist for particular carbon management technologies. In particular, there is an important role for agencies such as the Government Accounting Office and the Office of Management and Budget to play with respect to deterring the use of these funds as perverse incentives that may undermine climate mitigation and EJ goals.

Industry Role in Carbon Management

The WHEJAC workgroup is attentive to the possibility for perverse incentives created by significant federal financing to industries and market actors who are actively driving climate change under the guise of climate mitigation. Currently many of the incentives, both grant funding and tax credits, encourage industry to take advantage of generous public subsidies while potentially undermining climate goals. These financial incentives are largely accruing to firms that have vested fossil fuel interests. The outsized role of DOE as a catalytic investor in carbon management projects, coupled with relatively underdeveloped regulations and complex technologies and jurisdictional oversight, means that EJ communities are at significant risk of facing increased impacts from these projects.

These conditions result in an overall lack of guardrails for EJ communities, such as risk assessments, regulatory oversight, transparency, and assurances of monitoring, reporting, tracking, verification, and public accountability based in sound evidence. EJ communities continue to express concern and doubts because of a lack of robust, verifiable evidence that carbon management approaches like carbon capture technologies achieve their stated CO_2 capture rates or that the life cycle of hydrogen is much cleaner than the conventional fuels they purport to replace.

The ability of industries to claim generous tax credits under programs like the Treasury Department's 45(Q) may create the perverse incentive to run facilities like power plants more in order to be able to claim more credits, without achieving or proving stated levels of CO_2 capture rates. Also, the availability of tax credits and generous funding without clear guardrails could lead to industries cutting corners by repurposing old infrastructure in such a way that increases risk; for example, repurposing natural gas pipelines to move hydrogen.

These carbon management approaches are also being counted as benefits in relation to Justice40 and are used in CEJEST to target disadvantaged communities that are actively raising environmental justice concerns related to these investments. The combination of CBPs and industry's desire for generous tax credits put underinvested communities in vulnerable positions that could lead to exploitation in exchange for promise of future economic resources.

Academia's Role in Promoting Carbon Management

Without proper guardrails, the federal funding boom could indirectly (or directly; i.e., research grants) influence academic research institutions to produce research that is generally favorable to the deployment of these technologies and could prematurely validate technologies rather than focusing on the exploration of risks and uncertainties. There is a dearth of evidentiary research based in critical explorations of EJ concerns, risks and impacts. This is in part due to the nature of carbon management research, which largely derives from applications in enhanced oil recovery and fossil industries that are the major proponents (and funders) of current carbon management projects. We have seen this happen previously with recent evidence of the role of fossil fuel industries in obfuscating research that

demonstrated their role in driving climate change.[149] The November 2023 recommendations referenced performance and evaluation criteria to ensure independent research that is free of ties to industry groups or any affiliations or affinities to industry representatives and inclusive of EJ scholars.

Recommendation

There must be guardrails in all of the funding that focuses on preventing perverse incentives. Agencies need internal feedback loops as well as independent systems of checks and balances that alert to the misuse of funds in ways that undermine climate and environmental justice goals instead of advancing them.

149. Union of Concerned Scientists, "Fossil Fuel Accountability," www.ucsusa.org/climate/accountability; PBS, "The Power of Big Oil," April 19, 2022, Transcript, www.pbs.org/wgbh/frontline/documentary/the-power-of-big-oil/transcript; U.S. Senate Committee on the Budget, "Whitehouse, Raskin Urge DOJ to Investigate Fossil Fuel Disinformation" news release, April 30, 2024, www.budget.senate.gov/chairman/newsroom/press/whitehouse-raskin-urge-doj-to-investigate-fossil-fuel-disinformation.

APPENDIX A. Recommendations Related to SDWA, NEPA, Workforce, and Whole Health-Whole Government

Safe Drinking Water Act

Public Participation

Recommendation. EPA should suspend issuance of UIC Class VI permits to carbon management technologies and programs until it has made a determination that permits applications for projects currently under review and for well applications currently under review have achieved full compliance with *EPA, Environmental Justice Guidance for UIC Class VI Permitting and Primacy, August 17, 2023*. This determination should also ensure compliance with the participation procedures of 40 C.F.R. part 124. Further, this determination will be incorporated into the administrative record for issuance or denial of draft permits. EPA will also conduct a compliance evaluation for all Class VI wells issued to date by EPA and delegated state programs and take appropriate action for noncompliance.

Rational. Rule of Law: Class VI permit application review processes are subject to the general public participation requirements under SDWA. These are found in 40 CFR Part 25, Public Participation in Programs Under the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Clean Water Act. They outline minimum requirements for public information, public notice, and public consultation. Key provisions provide for: § 25.4 Information, notification, and consultation responsibilities; § 25.5 Public hearings: § 25.6 Public meetings; § 25.7 Advisory groups; and § 25.8 Responsiveness summaries. Further, EPA has discretion under 40 C.F.R. part 124 "to assure early and ongoing opportunities for public involvement in the permitting process," "if a Region has a basis to believe" that a proposed UIC permit "may somehow pose a disproportionately adverse effect on the drinking water of a minority or low-income population."[150]

In addition, in its Underground Injection Control (UIC) Class VI Permit Tracker, EPA describes its Class VI permit application review process to include five steps, one of which relates to public participation. EPA describes this step as "Public Comment—opportunity for the public to review and comment on the draft permit through written comments to EPA or requests for a hearing conducted by EPA." EPA also delineates general timeline estimates as approximately 25-month total process from application to final permit. Yet, in this timeline, only "30-45-day public comment period" is provided. Thus, while EPA has 24 months to review the permit, the public is only provided with one month.[151]

Environmental Justice: In August 2023, EPA issued a memorandum and accompanying guidance that outlined expectations for how agency staff should consider EJ in permitting and primacy evaluations. The guidance notes that stakeholders have raised concerns about the potential impacts of Class VI well projects on "overburdened communities." And it includes information for EPA and state UIC programs on identifying communities with potential EJ concerns, enhancing public involvement during the permitting applications processes, conducting EJ assessments of potential well projects, and enhancing transparency in the permitting process.

---

150. 40 C.F.R. part 124

151. U.S. Environmental Protection Agency, "Underground Injection Control Class VI Permit Tracker," July 5, 2024, https://awsedap.epa.gov/public/single/?appid=8c074297-7f9e-4217-82f0-fb05f54f28e7&sheet=51312158-636f-48d5-8fe6-a21703ca33a9&theme=horizon&bookmark=6218ffed-bb6e-42e4-a4f1-52d87e036a1b&opt=ctxmenu.

Example of Failure: The failure of EPA to adhere to these requirements is illustrated by the issuance of two draft Class VI permits on July 7, 2023, to inject carbon dioxide for permanent sequestration, numbered IN-165-6A-0001 (CCS-1, Vermillion County, Indiana) and IN-167-6A0001 (CCS-2, Vigo County, Indiana) to Wabash Carbon Services, LLC (WCS). Despite significant public concern, whereby EPA noted that more than 1,000 communications were received during the public comment period), the agency failed to comply with its on Environmental Justice Guidance on Class VI wells. Rather, it summarily dismissed consideration of environmental justice, which is made evident in its Response to Comments. Regarding environmental justice, EPA merely recited portions of Executive Orders 12898 and 14096; only referenced EJ Screen for low income and age; suggested its efforts for "508 web compliance" addressed disabilities; expected a "large newspaper ad" to achieve meaningful engagement. Despite congratulating itself for its public participation, EPA refused to extend the comment period beyond 45 days.

Congressional Concern: Finally, Congress has raised policy issues regarding Class VI wells, including EPA oversight. In its Congressional Research Service Report, Class VI Carbon Sequestration Wells: Permitting and State Program Primacy (April 16, 2024) public participation was raised as a specific policy issue. The Report raised the issue about *whether Congress should address stakeholder concerns about public participation in permit and primacy processes, and concerns about the potential environmental and community impacts of carbon sequestration through Class VI wells.*

Delegation of Primacy for State Programs

Recommendation. EPA should suspend delegation of primary enforcement authority for UIC Class VI programs until it has made a determination that each state has achieved full compliance with *EPA, Environmental Justice Guidance for UIC Class VI Permitting and Primacy*, *August 17, 2023* and that the Federal/State Regulation Comparison Crosswalk for a Section 1422 UIC Program Application for Class VI Wells has been completed and complied with applicable regulations pursuant to 40 CFR Part 145. Further, this determination will be incorporated into the administrative record for approval or denial of Class VI primacy. EPA will also conduct a compliance evaluation for states receiving primacy delegation to determine compliance with laws and regulations and commence withdrawal proceedings for states in noncompliance.

Rationale. Rule of Law: Pursuant to the SDWA, EPA is authorized to delegate primary enforcement authority, or primacy, for underground injection control (UIC) programs to individual states that meet minimum UIC program requirements. In this capacity, EPA establishes minimum standards for state programs to protect underground sources of drinking water from endangerment by underground injection of fluids. EPA UIC regulations set out the specific requirements for state programs in permitting, compliance evaluation, enforcement, and information sharing. A state must demonstrate that it has the legal authorities and processes in place to administer the Class VI program. A memorandum of agreement between a state with primacy and EPA, which is submitted along with other required documents, typically serves as the foundation of a state's specific responsibilities and commitments in administering the Class VI program. In addition, EPA regulations delineate the measures required for a state to receive program approval. Required steps in the program approval process are set out in 40 CFR Part 145,§ 145.31.[152] Important public engagement provisions are provided, including that public notice "Be circulated in a manner calculated to attract the attention of interested persons. Circulation of the public notice shall include publication in enough of the largest newspapers in the State to attract Statewide attention and

152. 40 CFR Part 145, § 145.31

mailing to persons on appropriate State mailing lists and to any other persons whom the agency has reason to believe are interested…"

Environmental Justice: The importance of environmental justice for delegation of state primacy is also clearly established in EPA guidance, *EPA, Environmental Justice Guidance for UIC Class VI Permitting and Primacy*, August 17, 2023. This document explains EPA's operating framework for identifying, analyzing, and addressing EJ concerns in the context of implementing and overseeing all UIC permitting and primacy programs, including primacy approvals. Importantly, it emphasizes that EPA Regions should consider this framework in evaluating applications for primacy to examine the extent to which environmental justice and equity planning and controls are incorporated into the proposed program. Once an application for primacy is received, EPA Regions should develop and implement a plan to engage with community-based organizations in the requesting state, Tribe or territory to understand perspectives and inform the evaluation of the application.

Example of Failure: The failure of EPA to adhere to these requirements is illustrated by EPA's approval of the application from the state of North Dakota under the Safe Drinking Water Act (SDWA) to implement an underground injection control (UIC) program for Class VI injection wells located within the state, except within Indian lands. EPA's approved regulation was effective April 24, 2018. The record reflects that "Public Participation Activities Conducted by the State of North Dakota" were limited at best and did not adhere to requirements of 40 CFR 145.31 and Executive Orders 12898. The state of North Dakota held two public hearings with public comment periods on the state's intent to adopt its Class VI UIC regulations, both in 2012. Both public hearings were held in Bismarck, North Dakota, and no public comments were received during the two public comment periods. Public Participation Activities Conducted by the EPA in 2013 were equally limited, with publication of notice limited to the Federal Register (78 FR 48639) and one newspaper, Bismark Tribune.[153] The agency did not receive any requests for a public hearing and received five written comments.

Amendments to the 2010 Class VI Rule

Recommendation. EPA should suspend issuance of UIC Class VI permits to carbon management technologies and programs until it has completed rulemaking to address new information available, current technology, environmental justice, public participation, and injection of carbon dioxide streams that are otherwise considered hazardous waste.

Rationale. Rule of Law: In the preamble to the 2010 rule, EPA stated its intention to review the rule every six years.[154] This rule has been in place for over 10 years, and requirements such as monitoring standards, area of review modeling, financial assurances, molecular diffusion of hazardous waste into underground sources of drinking water, among other issues, should be revised to reflect more recent technology and conditions.

Environmental Justice: In 2014, EPA revised the regulations for hazardous waste management under the Resource Conservation and Recovery Act (RCRA) to conditionally exclude carbon dioxide (CO_2) streams

153. "North Dakota Underground Injection Control Program Revision Application," August 2013, Federal Register, www.federalregister.gov/documents/2013/08/09/2013-19376/north-dakota-underground-injection-control-program-revision-application.

154. 75 Federal Requirements 77241.

that are hazardous from the definition of hazardous waste.[155] One implication of this rule change is that the injection of carbon dioxide streams would no longer be required to comply with the all EPA rules governing Class I Hazardous Waste Injection wells, found in 40 CFR PART 148—HAZARDOUS WASTE INJECTION RESTRICTIONS. Issues to be addressed include the nature of injectate, considering emerging contaminants; prevention of endangerment to underground sources of drinking water; UIC regulatory framework; and the implications of these vulnerabilities to environmental justice communities.

Activation of the SDWA Omnibus Clause

Recommendation: EPA should suspend issuance of UIC Class VI permits to carbon management technologies and programs until it has determined compliance with the UIC Omnibus Clause, including the prevention of migration of fluids into underground sources of drinking water from seismic activities, lateral displacement of injection and formation fluid, and upward migration through faults and fractures.

Rationale. Rule of Law: Under the UIC regulatory omnibus authority, an EPA Region has authority to impose, on a case-by-case basis, conditions necessary to prevent the migration of fluids into underground sources of drinking water.

Environmental Justice: EPA's authority to consider and address environmental justice can be activated in UIC permitting under the Safe Drinking Water Act. EPA has the opportunity to implement EO 12898 through the UIC regulatory "omnibus authority" by incorporating into a permit additional condition necessary to prevent the migration of fluids into underground sources of drinking water.

National Environmental Policy Act

Categorical Exclusions

Recommendation. Proposed federal actions for carbon management, including demonstration projects and large-scale pilot projects, involve extraordinary circumstances and therefore require compliance with NEPA through production of an Environmental Impact Statement. Carbon management technologies and programs should not be authorized pursuant to Categorical Exclusions of NEPA. Further, US DOE's rules of Categorical Exclusions should be evaluated and revised to the extent that they are applicable to Carbon Management operations.

Rationale. Rule of Law: It is well established that when a proposed action that may fall within a categorical exclusion involves impacts to minority populations and low-income populations in the affected environment, the agency should determine whether any extraordinary circumstances are applicable. Extraordinary circumstances are unique situations that may result in potential impacts beyond those generally arising from actions subject to the categorical exclusion. CEQ's recently released NEPA rules define "extraordinary circumstances" as: *factors or circumstances that indicate a normally categorically excluded action may have a significant effect. Examples of extraordinary circumstances include potential substantial effects on sensitive environmental resources; potential substantial disproportionate and adverse effects on communities with environmental justice concerns; potential substantial effects*

155. 40 CFR Part 260 (2014).

associated with climate change; and potential substantial effects on historic properties or cultural resources.[156]

Environmental Justice: Federal departments recognize that Executive Order 12898 does not change the legal thresholds for NEPA, including whether a Categorical Exclusion, Environmental Assessment, or an Environmental Impact Statement should be prepared.[157] Regardless of the NEPA review category, an EJ analysis should be performed to address whether the proposed project will impact EJ populations.

Mitigation and Monitoring

Recommendation: NEPA reviews for proposed federal action regarding Carbon Capture Demonstration Projects and Large-Scale Pilots should require mitigation and monitoring measures that provide capacity and funding for communities with environmental justice concerns to retain experts, including those with lived experience expertise.

Rationale: CEQ expresses in its recently promulgated NEPA rules "The encouragement to agencies to mitigate disproportionate and adverse human health and environmental effects on communities with environmental justice concerns is grounded in NEPA, which, while not imposing a requirement to mitigate adverse effects, nonetheless does "set forth significant substantive goals for the Nation." Specifically, NEPA declares that the purposes of the statute are "to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of [people]"; establishes "the continuing policy of the Federal Government" to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings" and to "preserve important historic, cultural, and natural aspects of our national heritage"; and "recognizes that each person should enjoy a healthful environment." 42 U.S.C. 4321, 4331(a), (b)(2), (b)(4), (c)."

Mitigation includes:

- Avoiding an impact by not taking a certain action or parts of an action.
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation.
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action; and
- Compensating for an impact by replacing or providing substitute resources or environments.

Environmental Justice: Examples of factors that agencies should consider to determine importance: Legal requirements of statutes, regulations, or permits; Human health and safety; Protected resources (e.g., parklands, threatened or endangered species, cultural or historic sites) and the proposed action's impacts on them; Degree of public interest in the resource or public debate over the effects of the proposed action and any reasonable mitigation alternatives on the resource; and Level of intensity of projected impacts.

---

156. 40 CFR 1508.1(o)

157. "Promising Practices for EJ Methodologies in NEPA Reviews." *A NEPA Committee and EJ IWG Document,* 2016, www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.

Direct, Indirect and Cumulative Effects

Recommendation. NEPA reviews for proposed federal action regarding Carbon Capture Demonstration Projects and Large-Scale Pilots should ensure that direct, indirect and cumulative effects are fully addressed in all sections of the NEPA review document, including identification of people of color, tribal and low-income populations; meaningful engagement; impact assessment; defining affected environment; consideration of alternatives; and mitigation and monitoring. This includes incorporation of actions to identify and prioritize areas that may require special attention or additional resources to improve health and health equity; educate and inform the public about their community; and analyze the unique, local factors driving cumulative impacts on health to inform policy and decision making.

Rationale. Rule of Law: NEPA and CEQ regulations require that federal agencies evaluate all the relevant environmental impacts of the decisions they are making, considering the "direct," "indirect," and "cumulative" impacts of a proposed action, and including by fully evaluating climate change impacts and assessing the consequences of releasing additional pollution in communities that are already overburdened by polluted air or dirty water.

Environmental Justice: CEQ defines effects to include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, such as disproportionate and adverse effects on communities with environmental justice concerns, whether direct, indirect, or cumulative.

Programmatic Reviews

Recommendation: DOE should suspend approvals pursuant to its Carbon Capture programs for Demonstration Projects and Large-Scale Pilots until a Programmatic Environmental Impact Statement has been prepared and the NEPA Review Process completed.

Rationale: Rule of Law: Programmatic NEPA reviews address the general environmental issues relating to broad decisions, such as those establishing policies, plans, programs, or suite of projects, and can effectively frame the scope of subsequent site- and project-specific Federal actions.[158] This guidance highlighted as an example, a programmatic NEPA review that served as an efficient mechanism to describe Federal agency efforts to adopt sustainable practices for energy efficiency, reduce or avoid greenhouse gas emissions, reduce petroleum product use, and increase the use of renewable energy including bioenergy, as well as other sustainability practices

Environmental Justice: The State of Washington conducts programmatic EIS as a broad environmental assessment that provides information for future project decisions. Existing conditions to be addressed include types of facilities, potential significant environmental impacts; and proposed mitigation to offset any potential impacts.

Illustration: The Washington Legislature directed the Department of Ecology to evaluate potential impacts and mitigation for three types of clean energy using the State Environmental Policy Act. It is required to prepare a Programmatic Environmental Impact Statements to provide high-level information on potential

158. Executive Office of the President Council on Environmental Quality, "MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES," Council on Environmental Quality, December 18, 2014, https://obamawhitehouse.archives.gov/sites/default/files/docs/effective_use_of_programmatic_nepa_reviews_final_dec2014_searchable.pdf.

impacts and mitigation. These environmental reviews are not intended to make any decisions whether a specific project should be built. Rather they will provide early information to be considered during planning. Each programmatic EIS will look statewide at the types of projects that could be built and evaluate potential significant environmental impacts. The three non-project environmental assessments will evaluate likely impacts on: Natural and built environments; Historic and cultural resources; Protected and endangered species; Habitat connectivity and migration corridors; Overburdened communities including environmental justice concerns; Tribal rights, interests and resources; Land uses; and Military installations and operations.

Executive Orders 13985, 14008, 14096

Whole Health, Whole Government Solutions for Communities

Recommendation. The WHEJAC should develop and implement a whole health, whole government restorative process for communities experiencing adverse cumulative impacts from carbon management technologies and programs. This process should simultaneously tackle profound health disparities, environmental injustices, and lack of basic needs and safety that place these communities at exceptional risk, with the vision of whole health of children and families, undivided by mental and physical illness, undistinguished by race, class, language, or ability, supported by safe places and environments surrounding every child and family, and sustained with financial resources for high-quality health care. Action should include, but not be limited to, the following: identify, prioritize, and take restorative action in areas with carbon management operations that may require special attention or additional resources to improve health and health equity; analyze the unique, local factors driving cumulative impacts on health to inform policy and decision making; apply ICD-10 Z Codes to heighten access to health care for environmental exposures; and educate and inform the public about measures to restore whole health (physical and mental) and well-being of children, families and communities.

Rationale. Rule of Law: Executive Order 13985 established the Administration policy that the Federal Government should pursue a comprehensive approach to advancing equity for people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. This is the responsibility of the whole of Government (executive departments and agencies), requiring a systematic approach to embedding fairness in decision-making processes and redressing inequities that serve as barriers to equal opportunity. Executive Order 14008 emphasized the mandate of "Taking a Government-Wide Approach to the Climate Crisis" to organize and deploy the full capacity of its agencies to combat the climate crisis that reduces climate pollution in every sector of the economy; increases resilience to the impacts of climate change; protects public health; conserves our lands, waters, and biodiversity; delivers environmental justice; and spurs well-paying union jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure." Executive Order 14096 recognizes that Communities with environmental justice concerns experience disproportionate and adverse human health or environmental burdens. These burdens arise from a number of causes, including inequitable access to basic human health and environmental needs. The cumulative impacts of exposure to those types of burdens and other stressors, including those related to climate change and the environment, further disadvantage communities with environmental justice concerns. People in these communities suffer from poorer health outcomes and have lower life expectancies than those in other communities in our Nation. Moreover, gaps in environmental and human health data can conceal these harms from public view, and, in doing so, are themselves a persistent and pernicious driver of environmental injustice.

Environmental Justice: Environmental, health and economic justice mandates policy to place base practices by whole of government that simultaneously tackles social determinants of health, root causes of environmental injustices, health disparities, economic inequities, and systemic racism faced by overburdened, underserved, and underrepresented communities. Social determinants of health (SDOH) are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. SDOH are recognized as important predictors of access to and engagement in health care, as well as health outcomes. "Z Codes" refers to the set of International Classification of Diseases (ICD-10) diagnosis codes used to report social, economic, and environmental determinants known to affect health and health-related outcomes and are attached to health services procedures. Enhancing the application of Z Codes will increase consideration of environmental exposures in health care delivery; document consideration of SDOH and environmental/climate exposures in healthcare settings and in environmental decision-making; foster alignment of Z Codes with health care reimbursement; and provide education to healthcare providers and communities on the health impacts of environmental/climate exposures.

Infrastructure Investment and Jobs Act

Workforce Development

Recommendation. For those selected carbon management technologies that are accountable to principles of environmental justice, workforce development and preparedness for the carbon management programs and operations should incorporate family (i.e., child and caregiver) mental health. This extends to systemic programming of relevant worker training programs funded by the Infrastructure Investment and Jobs Act, whereby life skills and mental health support are addressed. It also includes application in community benefits planning and agreements, where family mental health and stressors must be addressed.

Rationale. Recognize Family Mental Health as Fundamental to Workforce Development: Making improvements in a caregiver's mental health and well-being will not only be beneficial for caregivers, but also for children. Commitments must be made to consider the whole health of children, adolescents, caregivers, and families, considering both physical and mental health. The core unit of "family" must be viewed using an inclusive and multi-generational lens. Connections between family and maternal mental health and workforce development should be explored, explained, and addressed. Workforce development should promote family-sustaining jobs, including temporary support to workers and their families as they prepare for new career opportunities (e.g., training programs that pay trainees and support for educational expenses). Workforce development should engage community leaders for local outreach and recruitment to improve cultural competency and ensure equitable program design.

Environmental workers and environmental justice communities may lack access to mental health services. Other stressors such as food insecurity, energy costs, and housing challenges can have a cascading effect on mental health for primary caregivers, many of whom are women, and can be compounded by environmental exposures to contaminants from the air, soil, or water associated with fossil fuel facilities and carbon management.

Integrate Family Mental Health with Environmental Workforce Training: Family and maternal mental health should be a core component of environmental, climate and infrastructure related worker training programs. Frontline workers who address basic needs and safety, including contaminated site

remediation, food security, disaster and emergency response, weatherization, and community resilience, should be provided with mental health supports.

Bolster the Mental Health Workforce: Quality maternal mental health services require an expanded, well-trained workforce. Developing the mental health workforce (e.g., community health workers, community mental health ambassadors, etc.) can aid in addressing the country's mental health crisis, particularly in maternal mental health. Workforce development resources should address both individuals and organizations to meet the needs of a diverse population. At the individual level, this means resources for training to respond to family mental health concerns. At the organizational level, it includes recruitment, hiring, training, development, support, and retention.

APPENDIX B. Biochar Risks

Descriptions of Biochar Types

There is not a comprehensive list of biochar project/deployment types and associated risks which are critical as the process determines what byproducts occur:

Biochar Description	Risks
Wood-based Biochar: Wood-based biochar is a form of charcoal that is derived from the ***pyrolysis***, or heating, of woody biomass such as wood chips, sawdust, or agricultural waste. Biochar is created by heating the biomass in the absence of oxygen, which results in the production of a carbon-rich material with a highly porous structure.	**Deforestation:** The demand for woody biomass for biochar production can potentially contribute to deforestation if not managed sustainably. This can result in habitat loss and negatively impact biodiversity.[159] **Air Pollution:** The pyrolysis process used to produce biochar can release emissions, including volatile organic compounds (VOCs) and particulate matter, which can contribute to air pollution and affect air quality. Proper emissions control measures are necessary to minimize these risks.[160] **Soil Contamination:** If the feedstock used for biochar production contains contaminants such as heavy metals or pesticides, they can potentially be retained in the biochar and contaminate soils when applied. This can have adverse effects on soil quality and plant growth.[161] **Water Pollution:** Poorly managed application or excessive use of biochar can lead to nutrient runoff and the leaching of contaminants into water bodies. This can contribute to water pollution, eutrophication, and harm aquatic ecosystems.[162]
Crop Residue-based Biochar: Crop residue-based biochar is derived from agricultural waste materials, including stalks, husks, and straw left over after crop harvesting. These materials can be converted into biochar	**Air Pollution:** The pyrolysis process used to produce biochar from crop residues can release emissions such as volatile organic compounds (VOCs), particulate matter, and greenhouse gasses. These emissions can contribute to air pollution and impact air quality.[163] **Soil Contamination:** Crop residues used as feedstock for biochar production may contain contaminants like heavy metals, pesticides, or herbicides. If these contaminants are not effectively removed during the production process, they can become concentrated in the biochar and

159. Johannes Lehmann, et al. "Biochar effects on soil biota – A review." *Soil Biology and Biochemistry* 43, no. 9 (2009): 1812-1836.
160. D Chen, et al. "Emissions of volatile organic compounds (VOCs) during biochar production: A review." *Science of the Total Environment* 660, (2019): 1423-1437.
161. Luke Beesley, et al. "A review of biochars' potential role in the remediation, revegetation and restoration of contaminated soils, "*Environmental Science & Technology* 45, no. 11 (2011): 4954-4961
162. Thomas DeLuca, et al., "Biochar effects on soil nutrient transformations." *Biochar on Environmental Management,* (2015): 419.
163. Lehmann, *Soil Biology,* 43.

through pyrolysis or other processes.	potentially contaminate soils upon application. This can have adverse effects on soil quality and plant health.[164] **Nutrient Imbalance:** Depending on the feedstock used and the production process, crop residue-based biochar may have varying nutrient compositions. The application of biochar with imbalanced nutrient content can lead to nutrient imbalances in soils, affecting plant growth and potentially causing nutrient deficiencies or excesses.[165] **Soil Acidification:** Some types of crop residue-based biochar, particularly those derived from feedstocks with high lignin content (lignin is an important organic polymer which is abundant in cell walls of some specific cells. It has many biological functions such as water transport, mechanical support, and resistance to various stresses), and can have acidic properties. If applied in excessive amounts or in soils that are already acidic, biochar may contribute to soil acidification over time, which can impact soil pH and nutrient availability.[166]
Manure-based Biochar: Manure-based biochar is produced from animal manure, such as poultry litter, cow dung, or pig manure. Manure biochar is often created through a process called anaerobic digestion, which generates biogas and a digestate. The digestate can be further processed into biochar.	**Emissions and Odor:** The pyrolysis process used to produce manure-based biochar can release emissions, including volatile organic compounds (VOCs), ammonia, and other odorous compounds.[167] **Nutrient Loss and Leaching:** When applied to soils, excessive amounts of biochar can result in nutrient overloading, leading to nutrient loss through leaching into water bodies. This can contribute to water pollution and eutrophication (excessive richness of nutrients in a lake or other body of water, frequently due to runoff from the land, which causes a dense growth of plant life and death of animal life from lack of oxygen).[168] **Contamination and Pathogens:** Manure used as a feedstock for biochar production can contain pathogens, antibiotics, and other contaminants. If not properly processed or treated during the pyrolysis process, these contaminants can persist in the biochar and potentially contaminate soils and water sources upon application. This poses risks to both environmental and human health.[169]

164. Kurt Spokas, et al., "Biochar: A synthesis of its agronomic impact beyond carbon sequestration." *Journal of Environmental Quality* 41, no. 4 (2012): 973-989.
165. A.D. Laird, "The Charcoal Vision: A Win-Win-Win Scenario for Simultaneously Producing Bioenergy, Permanently Sequestering Carbon, while Improving Soil and Water Quality." *Agronomy Journal* 100, (2008): 178-184.
166. Beesley, *Environmental,* 45.
167. Sarah Hale, et al. "Quantifying the total and bioavailable polycyclic aromatic hydrocarbons and dioxins in biochars." *Environmental Science & Technology* 45, no. 24 (2011): 10480-10488.
168. Jeffery Novak, et al. "Impact of biochar application on fertility of a southeastern coastal plain soil." *Soil Science Society of America Journal* 78*,* no. 2 (2009): 533-544.
169. Caitlin Youngquist, et al. "Fate of antibiotics and antibiotic resistance genes during the full-scale manure composting and assessment of compost maturity indices." *Bioresource Technology* 223, (2016): 128-135.

	Greenhouse Gas Emissions: The production of manure-based biochar involves the release of greenhouse gasses such as carbon dioxide, methane, and nitrous oxide. These emissions can contribute to climate change.[170]
Algae-based Biochar: Algae-based biochar is derived from various types of algae, including microalgae and macroalgae (seaweeds).	**Nutrient Release and Eutrophication:** Algae contain high levels of nutrients, such as nitrogen and phosphorus. When algae-based biochar is applied to soils, these nutrients can be released, potentially leading to nutrient runoff and contributing to eutrophication in water bodies.[171] **Algal Blooms:** Algal blooms are rapid growths of microscopic algae or cyanobacteria in water, often resulting in a colored scum on the surface. If algae-based biochar is not properly managed during application, it can potentially contribute to the growth of algal blooms in water bodies. Algal blooms can have detrimental effects on aquatic ecosystems, causing oxygen depletion and harming aquatic organisms.[172] **Contaminant Accumulation:** Algae can absorb and accumulate contaminants from their environment, such as heavy metals and organic pollutants. If algae-based biochar is produced from contaminated algae biomass, these contaminants can be present in the biochar and potentially pose risks to soil and water quality upon application.[173] **Greenhouse Gas Emissions:** The pyrolysis process used to produce algae-based biochar can release greenhouse gasses, including carbon dioxide and methane. The emissions from biochar production should be properly managed to minimize their contribution to climate change.[174]
Nutshell-based Biochar: Nutshell-based biochar is made from the shells of various nuts, such as coconut shells, walnut shells, or almond shells. These shells are byproducts of the food	**Soil Acidification:** Some nutshell-based biochars, particularly those derived from feedstocks with high lignin content, can have acidic properties. Excessive or unbalanced application of acidic biochar can contribute to soil acidification over time, affecting soil pH and nutrient availability.[175] **Contaminant Accumulation:** Nutshells used as feedstock for biochar production may contain contaminants such as heavy metals or pesticides.

170. Dominic Woolf, et. al. "Sustainable biochar to mitigate global climate change." *Nature Communications* 56, no. 1 (2010).
171. Q Zhang, et al. "Effects of biochar from different feedstocks on the release of nutrients from soil and the growth of maize." *Science of the Total Environment* 705, (2020) 135938.
172. Y Wang et al. "Algae-derived biochar: A potential amendment for improving soil retention and plant uptake of phosphorus." *Chemosphere* 191, (2018): 886-894.
173. X Cao, et al. "Pyrolysis of poultry litter: Potential for nutrient and contaminant management." *Journal of Environmental Quality* 38, no: 5 (2009): 1992-2002.
174. B Liang, et al. "Carbon footprint and energy use of biochar from different feedstocks and pyrolysis temperatures." *Journal of Cleaner Production* 183, (2018): 76-85.
175. Beesley, *Environmental,* 45.

industry and can be converted into biochar through pyrolysis or gasification.	If these contaminants are not effectively removed during the pyrolysis process, they can become concentrated in the biochar and potentially contaminate soils when applied.[176] **Greenhouse Gas Emissions:** The pyrolysis process used to produce nutshell-based biochar can release greenhouse gasses, including carbon dioxide and methane.[177]

176. Spokas, Environmental Quality, 41.
177. Woolf, *Nature,* 56.

APPENDIX C. Information Request Inquiries

The following are information requests that have been posed to various federal agencies by the Workgroup and EJ organizations pertaining to carbon management projects:

- Where can the public access a comprehensive list of project titles and descriptions, names of principals and partners, geographic locations, contractors, subgrantees, and award amounts. This is in reference to all categories of carbon projects within DOE's Clean Energy Demonstrations Portfolio: "*The Carbon Management portfolio contains three programs: the Carbon Capture Demonstration Projects Program, the Carbon Capture Large-Scale Pilot Programs, and Regional Direct Air Capture Hubs*" and regional hydrogen hubs.

- How can the public and the [Carbon Management] workgroup access to the full applications awarded public monies, grant funding from DOE through their carbon management, hydrogen, and DAC program areas? What are the details describing the substance of the projects awarded?

- What are the stipulations of community benefits agreements and NDAs attached to CBAs funded by the DOE? What is the FOIA process or any other process for gaining access to these applications? If there is another mechanism by which communities can gain access to substantive information included in awarded projects, what is that process?

- What is the status of any “Community Benefit Agreements” that are part of Community Benefit Plans prepared for carbon management projects and how can the public access them or be notified of their existence?

- What are all the CBPs that have been produced to date and where can the public get additional information about these plans?

- What are the permits associated with carbon management projects such as the Carbon Capture Large Scale Demonstration projects, the FEED projects, CarbonSAFE projects, carbon sequestration projects, DAC hubs, hydrogen hubs and any other carbon management project funded by the federal government and under development? How can the public gain access to the permits and any monitoring, reporting and verification tied to the projects?

Records Requested and Definitions

US Environmental Protection Agency (EPA) relating to:

- The application by the State of Louisiana for primary enforcement authority over Class VI Underground Injection Control (UIC) that pertains to the storage of carbon dioxide (CO_2), and

- The EPA’s conditional exclusion of hazardous CO_2 streams captured from emission sources from the definition of hazardous waste in the Resource Conservation and Recovery Act (RCRA), as set forth in Hazardous Waste Management System: Conditional Exclusion for Carbon Dioxide (CO_2) Streams in Geologic Sequestration Activities, 79 Fed. Reg. 350 (Jan. 3, 2014). This request includes, but is not limited to:

1. A copy of the application and supporting documents submitted by or on behalf of the State of Louisiana for Class VI UIC primacy.
2. All non-privileged records of communication relating to EPA personnel's consultations and communications conducted as part of the application for Class VI UIC primacy in Louisiana.
3. All records of communications relating to EPA personnel's consultations and communications conducted in relation to the Hazardous Waste Management System: Conditional Exclusion for Carbon Dioxide (CO_2) Streams in Geologic Sequestration Activities, 79 Fed. Reg. 350 (Jan. 3, 2014), that include, but are not limited to:
    a. compliance with 40 CFR 261.4(h).
    b. the capture of CO_2 from an emission source for the purpose of geologic sequestration activities.
    c. any protocol for testing CO_2 streams for the presence of other hazardous waste, as defined by RCRA.
    d. any guidance on verifying certification statements that no other hazardous waste is mixed in with, or otherwise co-injected with CO_2 streams, and all other exclusions are met.
4. All records related to the sampling or testing of a carbon dioxide stream captured from an emission source, including all documents indicating the result of such sampling or testing.
5. All records related to requests 1-4 that EPA previously produced in response to other FOIA requests.

Exempt Records

If you regard any of the requested records to be exempt from required disclosure under FOIA,

we request that you disclose them nevertheless, as such disclosure would serve the public

interest of educating citizens and advancing the purposes of EPCRA. Federal agencies should, when invoking a FOIA exemption regarding any of the requested records, include in the full or partial denial letter, sufficient information for the requesting groups to appeal the denial. To comply with legal requirements, the following information must be included:

1. Basic factual material about each withheld item, including the originator, date, length, general subject matter, and location of each item; and

2. Explanations and justifications for denial, including the identification of the category within the governing statutory provision under which the document (or portion thereof) was withheld and a full explanation of how each exemption fits the withheld material.

If you determine that portions of a record requested are exempt from disclosure, please redact the exempt portions and provide the remainder of the record to the Requesting Groups at the address listed below. If the requested documents do not exist, please indicate that in your written response.